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THE BUILDER

A JOURNAL FOR THE ARCHITECT & CONSTRUCTOR

VOLUME CXXII. No. 4132. *Eightieth Year.*

FRIDAY, APRIL 14, 1922.
REGISTERED AT THE GENERAL POST OFFICE AS A NEWSPAPER.

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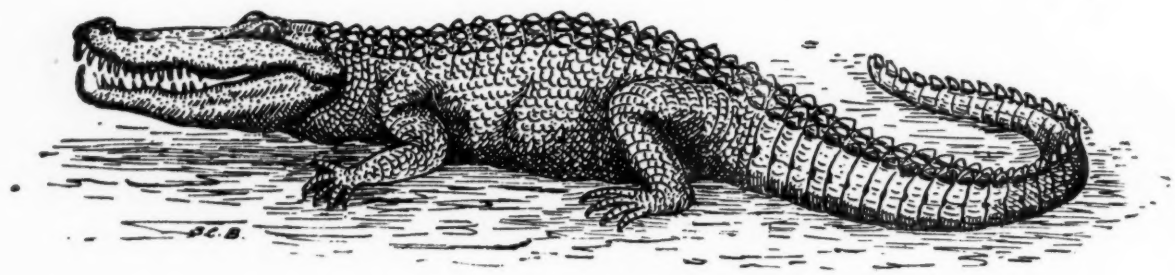

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THE BUILDER

A JOURNAL FOR THE ARCHITECT AND CONSTRUCTOR.

WITH WHICH IS INCORPORATED "THE BRITISH ARCHITECT."

VOL. CXXII.—No. 4132. APRIL 14, 1922.

THE TEACHING OF ART.

THE Report of the Departmental Committee appointed some time ago by the President of the Board of Education to inquire into the position of English in the educational system of England is a valuable contribution to the subject, and the conclusions embodied in the Report might be studied with much advantage by all interested in the teaching of art, for it contains many suggestions which would be very helpful to them. There is, in fact, much in this Report which has a very direct bearing on the teaching of art, and we wish that the Board of Education would in a somewhat similar way inquire into the methods under which art teaching is carried on at the present time.

We propose here to deal only with one of the points dwelt upon in this Report, which is concerned with the teaching of classics. It is pointed out by the Committee that "To give out information and insist on its being accurately registered is an almost mechanical matter; to convey anything of the feeling and thought which are the life of literature the teacher must have been touched by them himself and be moved afresh by the act of communicating the touch to others." This is a sentence very full of meaning, and renews in us the sense which we so often forget, that it is the least part of art that can be learned, and that if we insist only on this part, fill our minds only with the m echanics of craft practice, we are not on the best road to reach the intuitive quickening of art.

It would be only fair to say that this defect is very general. It is seen by this Committee to impair the teaching of English, and it is gravely impairing the teaching of art. The suggestions of the Report are towards a more humanistic attitude, calling attention to the defect in the teaching of English, of falling back too much on the giving out of information and the insistence of its being accurately registered, which, as the Committee states, is "an almost mechanical affair." Speaking of this defect the Report goes on to say: "Though to the student far less interesting than the poetical narrative, it appears to the teacher in general to be an easier task involving less personal effort on his own part." This is very similar in the case of art teaching, and its results are unsatisfactory by reason of this defect of method. By dwelling too exclusively on this craft side, on the informative and mechanical, we divorce art teaching too much from the thought and feeling which are the life of it. There is no doubt that instruction limited in such a way requires very much less effort, and a much lower endowment on the part of the teacher, and if this is so it points to the need for a better training for him, wider in its scope, and more liberal. Does the present training of the art teacher, as now carried on, qualify him to carry out both sides of art teaching—the informative and the mechanical, and the conveying of the feeling and inspiration of art? It appears not to be so, and to lack this higher qualification of understanding and appreciation of its nature, to which present results bear witness. It appears to us that the training of the teacher needs to be co-ordinated in some way with a university course to widen the basis of endowment for teaching—one, in fact, that is appealed to by the more personal, creative and humanistic, the thought and feeling which are the life of art no less than that of literature. For the teaching of craft methods as a sufficient end in itself is much as though we should make philology, structure and idiom, without the personal expression, the poetical narrative, the end of the teaching of English.

A direct encouragement to perpetuating a low standard in the teaching of art is the system whereby, so we understand, the grants in aid of art teaching are determined in amount not solely by the standard of the work executed but by the numbers of the pupils in attendance. Such a system may encourage abuse, and is often detrimental to efficiency. The art schools need to take example from the universities, and bring their teaching and discipline more into line with them; for to establish the claim to the grant on the numbers of pupils is not evidence of the efficiency and usefulness of the teaching or of the work turned out. We all know the story of the art teacher who to fill up his class used to send his models to sign on, to keep up the numbers. It is also reported that in a London school of art the average attendance is about one-third of the number of students. Whether this is altogether the case or not, it points to a slackness of discipline and to a basis out of touch with the needs of the time.

It is often said in answer to those who seek a better standard for art teaching that one "cannot teach art," which is, in a sense, true, but is a generalisation needing some qualification and capable of being very much misunderstood. When it is addressed by apologists for present methods, it appears only as an argument for the present state of things, *i.e.*, for the too exclusive dwelling on the scientific and technical side—on craft practice—instead of embracing that ampler, more endowed, teaching which is moved by inspiration, thought, and feeling for art, and can communicate the same feeling to the pupils. In this way only do we escape the lure of passing fashions—the failure to promote fine appreciations; and the danger of an art too superficial and uninspired by either tradition or beauty to communicate itself as of service for the upholding and welfare of life becomes paramount.

The arranged syllabus of some schools which fills up most of the students' time leaves his own feelings very much untried, and what he takes with him of natural sensibility to beauty on entering he often leaves behind, or has it replaced by a dexterousness of practice which takes no heed of the nature of art, and is little concerned with any standpoint but that of the school. The student should have more scope to develop his own identity instead of having this curriculum stamped upon him. The object of training is to liberate, to get out of the student what is within him, and to strengthen it through the grammar of art. The present method, which imposes a Slade School manner or Academy Schools manner on the student, stereotypes instead of freeing him, warps personality, and tends to the reversion to type. It has often been observed that the student who has enjoyed the least freedom for a protracted length of study in art schools produces the most significant and personal work, clothed in a treatment evoked out of itself. Perhaps he has had through obstructions of fortune to procure a livelihood meanwhile, and this, deepening his thoughts, has given him more catholic expression, which is "the precious jewel in its head." But it should not be the case that the very facilities for study should intervene against the best results because of the over-insistence of the more formalistic and mechanical side, the mere grammar of art. The teacher should not only be fitted to communicate this, but should have been touched enough by thought and feeling for beauty, moved enough by his own inspiration, to be able to re-communicate it to the students who are under his guidance.

NOTES.

Unification and Registration.

WE have received a copy of an interesting letter which Mr. Herbert T. Buckland, F.R.I.B.A., President of the Birmingham Architectural Association, has sent to Mr. Sydney Perks in reference to the discussion on "Unification and Registration." In his letter Mr. Buckland says: "The letter appearing in the professional press signed by the representatives of your Committee is merely another instance of the futility of a newspaper correspondence, as it evades a direct reply to the main point in my letter published on March 31:—'That your Committee should make clear their attitude towards the question of registration by statute.' Ever since the unfortunate differences upon the Institute's proposals with regard to unification began to develop, I have been feeling that many of these differences would disappear if a friendly talk could be arranged between representatives of your Committee and a few of the advocates of the Unification Committee's proposals to answer each other's questions, and endeavour to remove the misunderstandings which obviously exist on both sides. I am making this suggestion entirely off my own bat, but I am sending a copy of the letter to the professional press, and to the President of the Institute. If you and your Committee would agree to such a meeting, I would ask the President to nominate, say, four representatives of the Unification Committee to meet an equal number of your Committee. My idea is solely to endeavour to arrive at some definite understanding as to each other's point of view, and if at the conclusion of the meeting it was felt that any useful conclusions had been arrived at, that a statement should be drawn up and published, so that the profession might see how the matter stands between us, and be assisted in arriving at a judgment upon the points at issue." We have pleasure in giving prominence to Mr. Buckland's letter, as we think his suggestion an admirable one which should be accepted.

Archæological Discovery in London.

WE must all feel indebted to the Leathersellers' Company for their courtesy and help in realising the value of discoveries on their site in Gt. Helen's-place before building operations are begun. The Company, who acquired the property in 1538, have agreed to bear the cost of the explorations. In the cleared area, which is on the north-eastern side of the church, the full outline and foundations of an early Saxon church have been revealed. According to the *Morning Post*, the plan of the building, the character of the stone and mortar, especially in the few feet of walls here and there above the foundation line, are regarded by the experts who were invited to examine them on Saturday last as the undoubted remains of a very early Saxon church, probably of the seventh century, or about the time of Bishop Erconwald. It is thought that it was to that early church that the remains of King Edmund the Martyr were removed in 1010 from Bury St. Edmunds. A further and even more interesting discovery has been made. At one corner of the Saxon church foundations there has been brought to light a part of what is believed to have been a Roman church, with bright red bricks of almost vitreous texture, with other characteristics of Roman construction.

Zoning and Pyramidal Blocks.

THE recent enaction of the New York zoning laws regulate all buildings in the city in three respects: their use, area, and height. The first of these restrictions might with advantage be applied to some extent in our own cities, as we have often suggested. Already we find this restriction at work in a modified way without legal pressure, and it is hardly likely that the making of beer or pickles will in the future seriously interfere with the value of property inside the town or city. The zoning laws of New York, though they impose restrictions, do permit such results as are indicated in the diagrams which have been prepared by Messrs. Helmle & Corbett, the New York architects, and illustrated on this and the next page, and seem to encourage the production of pyramidal masses and outlines. The effects produced suggest a sort of weird grandeur, which may to certain minds afford compensation for the intrusion of lofty structures into the higher air of a city. Curiously, the heights of buildings are governed by a line drawn from the centre of a street through the top of the wall in a "lot" line. This would give a greater height in narrow streets. Surely the angle should be flatter for narrow streets! Whilst we may allow high buildings facing our parks, there is, we believe, a limit of 75 ft. in height for buildings facing parks in New York.

Art and Commercial Values.

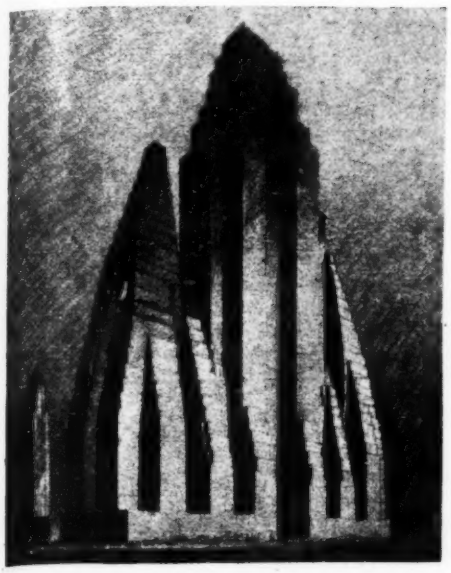
WITH much contained in the letter in our columns contributed by Mr. Guthrie last week we can find agreement, and when he tells us that it is "commerce that depends upon art, not art that depends on commerce," we find it true. But, accepting this, it does not follow that commerce is "the enemy," unless the words are used in an illegitimate sense, and mean what we express when we speak of it as "commercialism." Commerce is not the enemy of art. Art is in fact a form of commerce. It is work, on which we all depend. The pity is that the two should have become so far from each other; and besides, is the artist always free from "commercialism"? Is the artist in full possession of his own spirit? As Mr. Guthrie says: "There is no simple, self-contained method in use by which art can be at leave to be efficient and complete on its own grounds, although we may be certain that it can be of no service anywhere to the full unless it is first in possession of its own spirit." To obtain this freedom it needs first of all a true confederacy of principles amongst artists, to enable them to act together in protection of their own patrimony and to withstand the many abuses through which commercialism has fettered their freedom, but they must first be united amongst themselves.

Our Decaying Cathedrals.

THE fact that both at Lincoln and Exeter extensive repairs are required to the Cathedrals, at a time when the difficulty of realising sufficient funds for the purpose is so great, may have the advantage that repairs are more likely to be limited to such as are absolutely necessary. For it is still not sufficiently recognised that it is only in degree that they can withstand the inevitable decay that time imposes on them. Restoration is never satisfactory, and it is only where structural necessities compel renovation that work should be carried out. To do more is loss rather than gain. At the same time there is a very different outlook on the subject than existed thirty years ago. The north transept of Westminster Abbey stands as witness of a restoration under which the original features are entirely buried. Patching is much better than renewal, and, apart from necessary structural

From *The New York Times*.

"The Evolution of a City Building under the Zoning Law."
[See Note on this page.]



"The Evolution of a City Building under the Zoning Law."
[*See Note on page* 546.]

security, repairs should be carried on with the idea only of retaining what there is and not of renewing what has largely decayed.

Smoke: A Suggestion.

Sir Napier Shaw, writing in *The Times*, of April 5, makes the interesting suggestion, with regard to dwelling houses, that we should reward those who emit no smoke rather than try to punish those that emit too much, the latter system having already failed and being obviously impracticable. His proposal is that the assessment for rates of houses that make no smoke should be reduced in comparison with those that still pollute the air. This would, in effect, amount to a subsidy to those householders who avoid burning soft coal, and the question arises as to whether or not such a subsidy would be justified. In dealing with the smoke evil we have to take into account numerous causes of waste, including injury to health, to buildings, and to vegetation, the constant need for repainting, for cleaning windows and fabrics, the diminution of daylight, and the delay involved in traffic interruption due to smoke fogs. If the expenditure necessitated in combating the above could be reckoned accurately in £ s. d., we should find that the subsidy required to put an end to smoke from dwelling houses altogether would fall much less heavily on ratepayers than does the existing contamination of the atmosphere. It would certainly be fairer to subsidise from the rates than from the taxes, because those taxpayers who dwell in the country would benefit relatively much less than those who dwell in or near the large towns. Seeing that a certain amount of expense must generally be borne by a householder in changing over from the open coal fire to a smokeless form of heating, a subsidy to accelerate this end would be beneficial. The true interests of "Anti-waste" are identical in this connection with the interests of "Anti-smoke," and this fact should not be overlooked.

Economy and Relativity.

Sir Napier Shaw refers also to industrial smoke, and assumes that the solution of that problem can be found "simply on economic grounds." The economic principle is like the principle of relativity; its interpretation varies with the framework of reference. What may be considered economic from the standpoint of the manufacturer may be the reverse of economic for his neighbours. He may choke them with soot and say that he finds it cheaper to do that than to alter his plant, while the neighbours, in such circumstances, would probably save money in the long run by banding together and presenting him with a smokeless plant out of their own pockets. It is time that the neighbours had a say in the matter, and we trust that the Minister of Health will see his way to take energetic steps in abating atmospheric pollution.

A Palace of the Arts

As the supply of modern art greatly exceeds the demand it is possible that the public is not sufficiently informed as to the large amount and variety of pictures and other forms of art which are being so continually produced, and that some more effective means might be adopted to alter this state of things. Mr. Lewis Hind considers the establishment of a Palace of Arts might solve the problem, or at least do much to give the public a better chance of seeing what is being done. In an address at the Forum Club the other day he said: "Ninety per cent. of art workers did it for a living because they had to, and they should have ordinary methods of business, but everything was left to chance. They must get the public to acquire the art habit, as they had in the old days in Athens, Florence, and Venice, and the artists must bear their share in that education by co-operation and co-ordination. The public did not consider art important, and it was the artists' fault because they did not combine. At present pictures were produced and shown in a gallery for two or three weeks, and before the people had even heard of it the show was closed. We were playing with art to-day.'

Picture Barter.

An announcement in *The Times* agony column that an artist of "international honours offers landscapes at half-price" in exchange for commodities, wearable, consumable, "ornamental," following as it does on some particulars in the same contemporary of an organisation formed in France with a similar object, has a good deal that is very commendable in it. The taste for art is now no longer the exclusive possession of a class, nor dependent on a money qualification, and there are many small manufacturers and tradesmen not without a wish to enjoy the possession of artists' work. But it seems to them that art is too expensive. If, therefore, it was known to Mr. A. that he could exchange for a sack of flour and a small sum of money a work of art, or that Mr. B., in exchange for a tweed suit to measure, could enjoy on his walls an agreeable painting, and at the same time there were no longer any false feelings over such a transaction, it might lead to a circulation of the work of artists which under present economic conditions is very slow.

The Building Exhibition.

There seems ample enough justification for another Building Exhibition in the collection of building materials and appliances which was opened at Olympia on Tuesday by the President of the R.I.B.A. We are glad to find evidence of the increasing realisation of exhibitors that isolated samples of materials cannot compare in interest with reasonable displays of how they will appear in actual building work. Some excellently designed pavilions, walls, roofs, and interiors afford graphic illustration of materials as they would look in real erections. Bricks, tiles, slates, fittings and decorative adjuncts are well displayed, and give architects and builders a fair idea of the many admirable materials at their disposal. The more this aspect of the building exhibitions is borne in mind the more useful they will become, for many things fail to obtain a fair recognition unless they are arranged in a pleasing artistic form.

"Architects' Olympian Night" Poster.

[This poster, advertising the "Architects' Olympian Night" at Olympia on April 21, shows that architects can design artistic posters.]

GENERAL NEWS.

Professional Announcement.

Mr. G. H. Farley, F.S.I., M.S.A., and Mr. S. Hatfield have reopened practice as quantity surveyors at 24, Park-row, Nottingham, and at 17, Market-place, Banbury (Telephone, 3071 Nottingham), and will be pleased to receive trade catalogues.

Building Guild Tender Accepted.

The Newcastle-on-Tyne Housing Committee has accepted the tender of the Building Guild for the erection of 232 houses on the Pendower Estate. This was the lowest received, and it is stated that £70,000 separates the highest and lowest tenders.

Cardiff Technical College.

The Principal of the Cardiff Technical College announces that valuable prizes have been placed at the disposal of the committee by the Cardiff Building Trades Association and prominent members of the trade.

The First Atelier at Olympia.

By permission of Mr. H. Greville Montgomery, a smoking concert will be given by the students of the First Atelier of Architecture in the Conference Room at Olympia, on April 22, at 8.30 p.m.

Kingswood War Memorial.

A war memorial has been unveiled at Kingswood, Wotton-under-Edge, Gloucestershire. It consists of a public shelter, built of Minchinhampton stone, while the roof is supported by 6 in. arms of English oak. A tablet in Portland stone, let in the wall, has the names of the fallen engraved upon it The memorial was designed by Mr. Percy Julius, F.R.I.B.A., M.S.A., who acted as honorary architect.

Royal Institute of British Architects.

At a meeting of the Council of the R.I.B.A. held on April 3, it was decided to approach the London County Council and endeavour to arrange for the continuance of the work of the Civic Survey for Greater London as a means of providing employment for architects during the present period of depression.

Mr. H. W. Burrows was appointed as representative of the Institute to confer with a sub-committee of the Metropolitan Water Board on the revision of the regulations for the prevention of waste, misuse, undue consumption, or contamination of water

The amended constitution of the Royal Institute of the Architects of Western Australia, carrying with it the use of the title "Royal," was approved under the provisions of By-law 79.

Mr. H. D. Searles-Wood was appointed to represent the Institute on the Building Trades' Parliament.

The applications of 10 candidates for the Fellowship and 24 candidates for the Associateship were approved.

Mr. C. F. Ward (Fellow), and Mr. J. Hardwick Higgs (Licentiate), were reinstated.

An exhibition of drawings of Armenian architecture from the sixth to the thirteenth century, by Mr. A. Fetvadjian, will be held in the Galleries of the Royal Institute from April 19 to April 29. The exhibition will be open from 10 a.m. to 5 p.m.

A visit to Somerset House has been arranged for Saturday, April 29. Applications should be made to the Secretary not later than April 20.

COMPETITION NEWS.

Blackpool.

The plans of Messrs. Maxwell & Tuke, architects, engineers and surveyors, of 25, Brazennose-street, Manchester, have been accepted in limited competition for the rebuilding of the pavilion (or concert hall) to accommodate approximately 2,000 people on the North Pier at Blackpool.

Auckland War Memorial Competition.

Designs for a war memorial building, for the Auckland (N.Z.) War Memorial Committee and the Auckland Institute and Museum. Sending-in date, June 30 from London. (See our issue for September 2, *et seq.*)

Newport (Mon.).

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a cenotaph. Sending-in day, May 1. (See our issue for March 31.)

The conditions of this competition are unsatisfactory; the Competitions Committee of the R.I.B.A. is in negotiation with the promoters in the hope of securing an amendment.

Dundee.

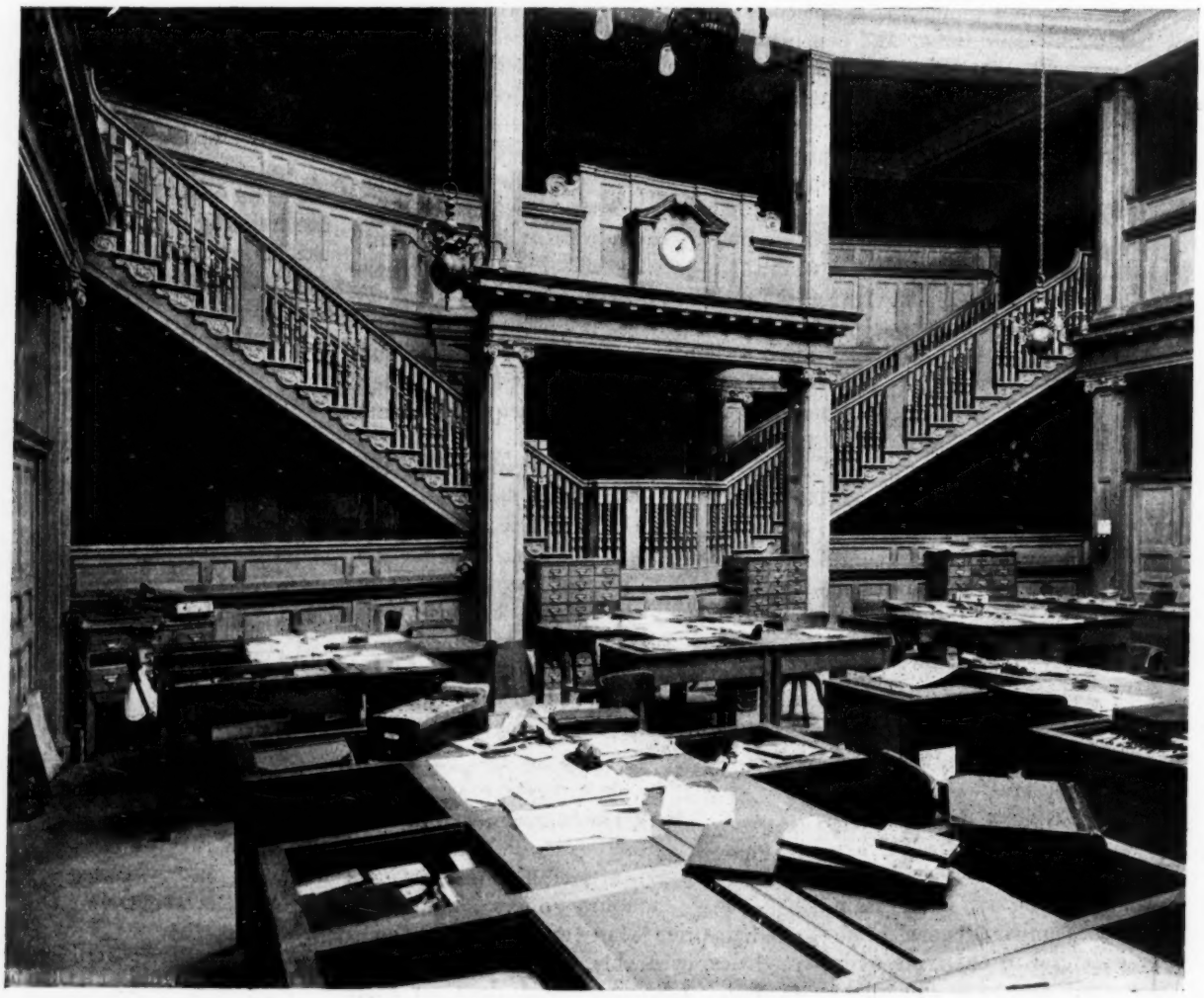
FOR THE DUNDEE WAR MEMORIAL COMMITTEE.—Designs for a war memorial. Sending-in date, April 30. (See our issue for January 6.)

Ipswich.

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a war memorial. Sending-in day, June 17. (See our issue for March 21.)

Other Competitions.

Other competitions still open include the following (the dates given are, first the sending-in date, and second the issue of *The Builder* in which full particulars were given):—Trujillo (Peru) monument (June; Jan. 13); Colour Competition (May 1; Feb. 17).



New Offices Luton. MESSRS. H B. CRESWELL & W. A. FORSYTH, FF.R.I.B.A., Joint Architects. (*See p.* 556.)

CORRESPONDENCE.

Unification and Registration.

SIR,—In a letter published in your last issue, the representatives of the R.I.B.A. Defence League submit that they have not misrepresented the views of the Unification Committee, and in support of their contention they purport to quote the remarks which some of the speakers made at the unification meeting on May 12, 1921, as reported in the R.I.B.A. *Journal* of May 28, 1921.

I am quoted by the Defence League as say ng that "Scheme A was the bringing of all the architects in the Kingdom into the R.I.B.A. That meant what it said, even if they had all the architects in the Kingdom in the Institute," &c.

The foregoing is an unauthorised abbreviation of the following passage in my remarks as reported in the R.I.B.A. *Journal*: "Mr. McArthur Butler said . . . Scheme A was the bringing of all the architects in the Kingdom into the R.I.B.A. That meant what it said, *he hoped, and that they were all going by some means yet to be devised to be members of the Institute* . . . even if they had all the architects in the Kingdom, &c." The italics are mine and represent the words deleted from the reprint of my remarks by the officials of the R.I.B.A. Defence League to suit their own ends.

I am credited by the Defence League with having sufficient intelligence, in common with others, accurately to express my thoughts in words, and I may perhaps be permitted to inquire on what grounds and with what object the representatives of the Defence League deliberately mis-quote my remarks and, therefore, mis-represent my views on the main point at issue.

C. MCARTHUR BUTLER.

SIR,—Mr. A. W. S. Cross and his colleagues are indignant, but they do not meet the very well-grounded criticism contained in Mr. Grayson's letter and in Mr. Buckland's. Instead, they whip up the weary old "all architects" horse, and trot him out for inspection again when everyone has grown tired of him.

What they have to apply themselves to is an explanation of why they stole a march on our provincial members by seeking a snap vote at a London meeting, and why, having embraced the anti-registrationist faith, they still profess adhesion to their old registrationist doctrine. Whenever they come before us "the voice is Jacob's voice, but the hands are the hands of Esau."

They tell us in their latest letter that they submitted the scheme of the Unification Committee to their Parliamentary agents and explained it at length. This does not appear in the document they sent out to the members of the R.I.B.A. In that document they print, *in extenso*, their letter of instruction to those agents and it comes very far short of explaining the scheme at length; in fact, it misrepresents the scheme very completely by failing to show the care that is taken in it to exclude all whose qualifications are not of a suitable order. Mr. Cross argues that this exclusion precludes unification; he might equally argue that the exclusion of builders precluded it. The actual scheme of the Committee, quite clearly set out in general principle, is proper material for discussion and in ordinary fairness it should not be misrepresented.

For my part, I am out to help the members of the Institute, and of the profession generally, to secure what they want. Everything points to the fact that they do want unification because they think it is in the best interests of us all. They have come to a well-considered judgment on the matter, and in order to arrive at such a judgment they must read what the Unification Committee says and not what the Defence League tells them it says.

ARTHUR KEEN,
Hon. Sec.
Unification and Registration Committee.

Theatre Exhibition.

SIR,—With the co-operation of the British Drama League and other societies and individuals connected with the stage, the important Theatre Exhibition, which was recently held with great success at Amsterdam, is being transferred to London. Several galleries of the Victoria and Albert Museum are being set aside for this Exhibition, which, it is hoped, will open early in June.

The authorities of the Museum are responsible for all matters relating to administration. A fund to cover expenses is being raised by the British Drama League, and in all questions relating to selection, decoration, hanging, &c., the Museum is being assisted and advised by special committees.

The Selection Committee hopes that artists who have done work for the theatre will submit drawings or designs (for scenery, stage-setting, costume, &c.), not exceeding six in number. These drawings should be labelled "International Exhibition," and delivered to the Victoria and Albert Museum on any day up to and including April 30.

Those who wish to submit a model (which must not exceed half-inch scale) should apply, in the first place, to the General Secretary, Mr. Martin Hardie, Victoria and Albert Museum, S.W. 7, who will be glad to give information on this and other points.

An application form, which should be signed and sent with exhibits, or before their despatch, will be supplied on request by the General Secretary.

CECIL HARCOURT SMITH,
Director and Secretary.

Rights of Associates.

SIR,—This matter is very simple. The question is, "Have Associates the same voting powers as Fellows?" The answer is, "No." I understand that nine years ago the Council and the general body decided that Associates ought to have exactly the same powers as Fellows, but this and other important reforms were held up on account of the war, and are now delayed because of the Unification and Registration Committee's proposals. The remedy is very simple: let us get rid of that scheme and start work on something really useful.

SYDNEY PERKS.

London.

[*** An interesting suggestion on the subject of unification and registration by Mr. Herbert T. Buckland is dealt with on p. 516.]

The Employment of Students on Public Work.

SIR,—I submit that such a correspondence as has arisen over the intention to employ students under their art masters for the County Hall should be discussed with much forbearance. It concerns the students really very much less than the artist, and they should be left out of the discussion. The danger is lest artists should be ranged against each other: the official and salaried artists holding appointments as professors or directors of art under the State, and those other artists of attainment who enjoy no such financial security. The latter cannot undertake work without being properly paid for it, and find the position biassed against them and their work undersold by State officials who, secured in endowments, can therefore do the work cheap! We should like to know from Mr. Bayes what semi-gratuitous means. Let us have the facts. In any case we know more than we knew before after reading Mr. Bayes's apparently excusing letter. For not only have spaces been offered and accepted, but other more important wall spaces in the County Hall have been offered to the Heads of these schools themselves. Mr. Bayes does not seem in the least to understand the false position he is in, and that he does not see it is what astonishes many of us. That in order to give some validity to the proceedings they should spread the idea that there is no such thing as mural art in England is astonishing. It may be that these professors do not like what others have done, but that is no justification for such a proceeding. Mural painting is not a new theme to those acquainted with mural art, and it is most unfair to artists to suggest that it is so. What many artists are considering is the danger to the arts of all this professionalism and officialdom. Under such bureaucratic control art will not prosper, because it needs freedom for itself, and its liberty is endangered. As has been said by a writer, "We want art exuberant, not starved"; and if it is to fall into the hands of officialdom, not only to rule it but to intercept opportunity from the artists to share amongst themselves, artists who care for art and follow a better ideal will have to combine to save art from such servitude.

MEMBER OF THE SOCIETY OF MURAL DECORATORS.

Old Painted Glass.

SIR,—Referring to the note in your issue for the 17th inst., upon my letter to the *Times* for the 9th inst., on the subject of the "Export of Old Painted Glass," may I point out that you do not quote me correctly when you say that "the writer suggests that the weak points in the matter of design by the modern glass painter arise through his having seldom had acquaintance with ancient examples."

Your criticism upon this is, "this can hardly be said to be the case, as there are still many fine examples, such as those of York and Fairford."

What I actually said was that "the weak points, in the matter of design, of modern glass, are largely due to the fact that *students qualifying to be glass painters* have seldom much first-hand acquaintance with ancient examples." You will, I think, allow that there is a difference between the two readings.

I had in view the usual training of a modern glass painter—a course in a school of art, and then training in the studio of a master glass painter. I venture to suggest that a better system would be for the aspirant to glass painting, after mastering the elements of drawing and painting and the use of materials, to spend a year in going about the country studying and tracing ancient painted glass *in situ*, so getting hold of the ideas which inspired the old craftsmen, and, as a result, becoming an enthusiast for conscientious and scholarly work. If such a tour were impossible, the next best thing would be similar work in a museum (*e.g.*, the Victoria and Albert), where there may happen to be good examples of old glass and a large collection of coloured tracings. The next step, in either case, would be training in a studio, as at present.

Where a student gets his training in the midst of old glass, *e.g.*, at York, Canterbury, Exeter, or Lincoln, and he is encouraged to make use of his surroundings, the tour or museum course might, perhaps, be dispensed with.

F. SYDNEY EDEN.

"Buckfast Abbey."

SIR,—Referring to the interesting sketches of the above published in *The Builder*, March 24th, a short time before the war I was the guest of the Prior, Father Massé, O.S.B., and had the privilege of seeing all the work that has been so beautifully carried out by the monks. The Prior studied sculpturing at my old friend's (Harry Hems', of Exeter) studio, and personally carved the best of the figures forming the stone corbels. The Abbey is well worth a visit by anyone interested in Gothic architecture.

EDWARD VALE.

Weston-super-Mare.

THE GEOMETRICAL DECORATION OF DOMES.

BY WILLIAM HARVEY.

The dome is a feature of architecture introduced into England from abroad, and it may be doubted whether Englishmen have ever come to regard it seriously as a form of normal building construction. The barrel vault still survives in domestic use among us in basement coal-cellars, but the dome is reserved for the higher and special flights of sacred and monumental architecture.

Sir Christopher Wren, with his passion for adventure in the realms of the colossal, used the dome in the most legitimate fashion, realising to the full its double function as roof and architectural feature, and had his skill descended through succeeding generations the dome would have been so familiar as to render a discussion of its decoration superfluous. So far is this from being the case that when some years ago a proposal was set on foot for the redecoration of the interior surface of the dome of St. Paul's no two architects could agree as to the best manner of carrying out the work. Without entering into the merits of any of the proposals then put forth it may be broadly stated that some confusion arose over the imperfect apprehension of the fact that there is a fundamental difference between the Eastern and Western system of architectural decoration. In the West the buildings derived from the Greco-Roman have a composite character and are composed of an articulated structure of columns, pilasters, ribs, architrave mouldings, and the like, with panel-like walls filling in the voids between the articulate members. In the East, on the other hand, the architecture is simple, and one part of the wall surface is structurally of as great importance as the neighbouring portions. A Western building is a combination of individual parts, and an Eastern more in the nature of a homogeneous shell.

Obviously, this great difference in structural essentials demands a corresponding difference in decoration, at any rate in the matter of scale and possibly of subject. Given a building like St. Paul's Cathedral, already furnished with pilasters and entablatures and the suggestion which these things imply (that they are the weight-bearing framework), it is impossible without incongruity to decorate any part of the interior on the Eastern principle, which does not recognise the necessity for such a framework at all. To carry the decoration scheme of the lower stories into the dome it is essential that the dome surface be "quartered" up into a series of ribs and panels corresponding with the architectonic features below. The ribs and panels must, in the nature of things, have some geometrical properties, even though they merely divide the dome into vertical segments like the sections of an orange; they would be, of course, but frames for further decoration, simple and conventional, on the ribs, and more elaborate and naturalistic in the panels. The dome at present is so divided with painted columns separating panels filled with naturalistic figure painting. From an artistic point of view the panel walls between the ribs are considered to have no structural value, and the spectator looks through them as through a window into the aerial perspective of the picture, the ribs being supposed to carry all the weight. It is only by the use of this convenient fiction that naturalistic painting, involving life-like figures, perspective and light and shade can be included correctly under the heading of architectural decoration.

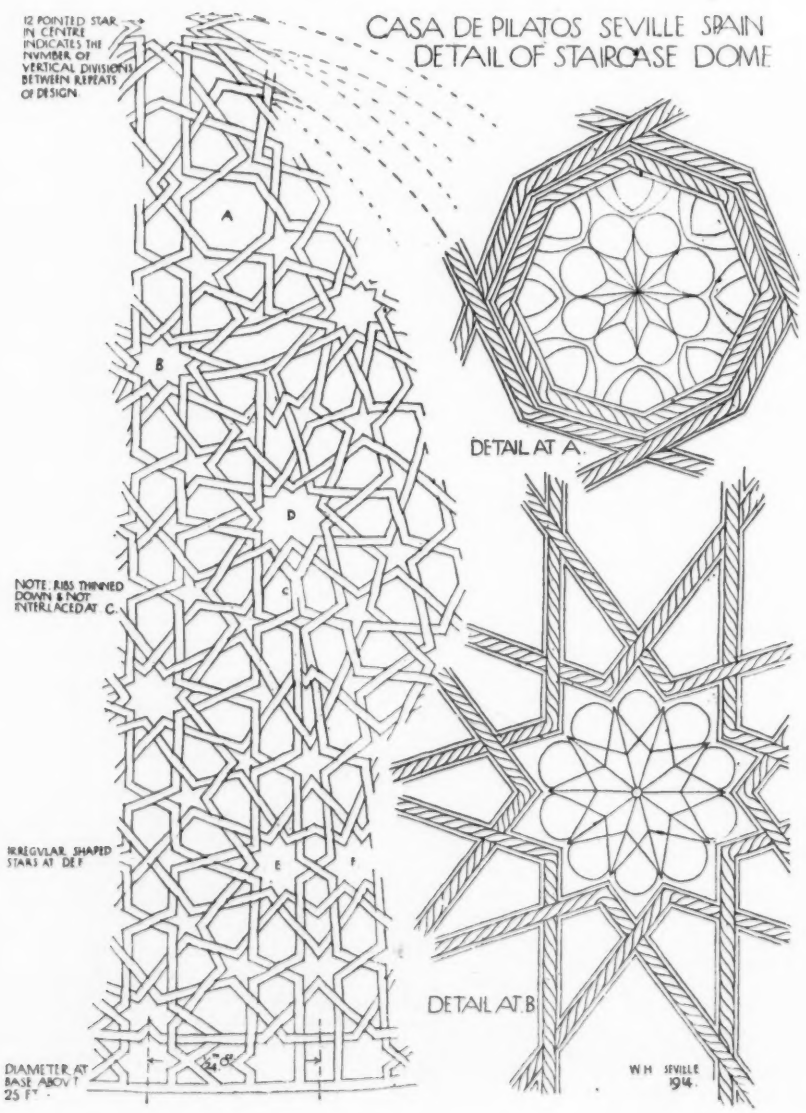
The dome of St. Peter's at Rome is also divided by decorative ribs, which act as frames for the naturalistic figure subjects introduced into panels between them. It need hardly be said that in neither of these great buildings do ribs play any part in the actual construction of the domes, which are built, as domes should be, in the form of continuous curving walls.

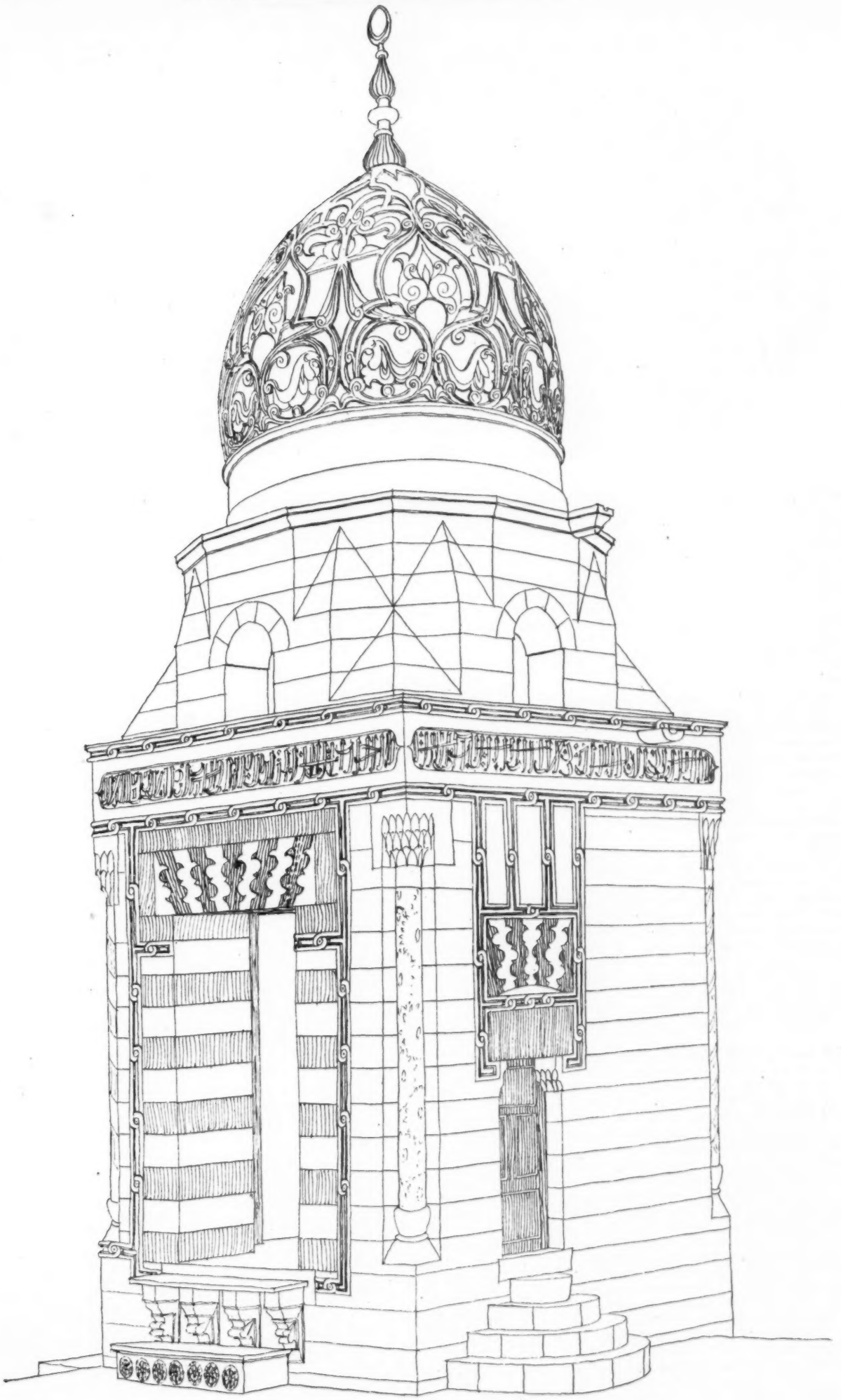
Byzantine decoration, notwithstanding its figure subjects, belongs to the Eastern treatment, and where figures occur they are severely conventional and blended into the surrounding wall surface by the great strength of colour employed on all parts. Perspective and shading are either entirely absent or so rudimentary as not to destroy the breadth of the wall surface. It is a matter for rejoicing that Mahomet's ban on naturalistic art was pronounced in those countries where the homogeneous shell type of architecture was practised, for Oriental decoration was destined to blossom into extraordinary beauty under this severe but salutary pruning. Geometrical patterns are pre-eminently suitable for the ornamentation of simple surfaces, and there is little doubt that they were in many cases chosen with a view to expressing the structural value of homogeneity, just as Gothic ribs and mouldings express a delight in the opposite principle of balanced collections of individual parts; at all events, geometrical decoration came to its fullest development in buildings erected for Mahommedan purposes, and while the Saracenic people perfected this form of ornament they were also experimenting with the design of the architectural feature by its nature most suited for its application, the dome. No other building form embodies the ideal of the homogeneous shell so fully, and if it be granted that geometrical decoration is suitable for simple surfaces undivided by ribs it is at once apparent that it is still more appropriate on a dome, and is the finest way of expressing the beauty of its modelled contours. So at least thought the Mahommedan dome builders, who used the system from Spain to India.

In practice the decoration of domes has been a matter of gradual evolution from an irregularly spaced diaper of ornamental paterae in the Mycenean tombs, through the square and diamond-shaped coffers of the Romans, to the domes of the Renaissance, where geometrically-arranged ribs have frequently acted as frames to painter's work of such an advanced order as to be almost beyond the limits of decoration.

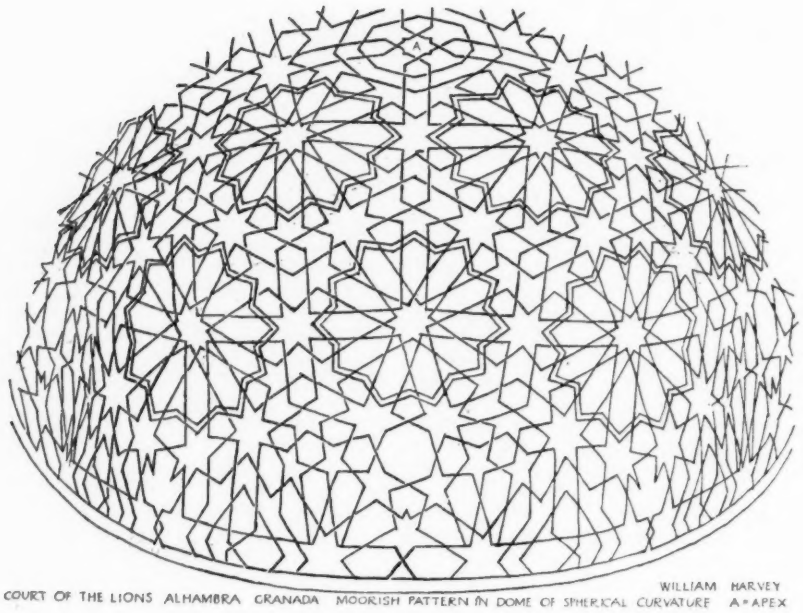
Saracenic domes derive less from the heavily-coffered Roman examples, and are more nearly related to Byzantine and Sassanian originals of greater suavity of surface. The scale of relief of Saracenic geometrical patterns is far smaller than the massive coffering of a Roman vault, and suggests the rich intricacy of woven carpets rather than the recessed stages of brick construction.

Geometrically-decorated domes, if examined in detail, are found to be grouped in two classes, those in which all the decoration tends to grow smaller in scale towards the highest point of the dome (by far the greater number) and those in which an attempt is made to retain the same scale throughout the decoration and to express the breadth as well as the height of the dome. Considered as a geometrical problem, the second method presents the greater difficulties and can only be completely solved by the adoption of a polyhedric basis for the setting-out of the pattern. The first method is comparatively easy, as the whole design can be set out as if for a plain surface upon a mere vertical strip showing the true length around the curve between the base and apex of the dome. The width of the strip varies according to the number of times


CASA DE PILATOS SEVILLE SPAIN
DETAIL OF STAIRCASE DOME
12 POINTED STAR IN CENTRE INDICATES THE NVMBER OF VERTICAL DIVISIONS BETWEEN REPEATS OF DESIGN.
A
B
C
D
E
F
DETAIL AT A.
DETAIL AT B.
NOTE RIBS THINNED DOWN & NOT INTERLACED AT C.
IRREGVLAR SHAPED STARS AT DEF
DIAMETER AT BASE ABOVT 25 FT.
W H SEVILLE 1914.



Fountain of Kait Bey, Jerusalem.
From a drawing by Mr. William Harvey.
[The axis of dome and drum is placed somewhat to the west of the centre of the lower story.]



COURT OF THE LIONS ALHAMBRA GRANADA MOORISH PATTERN IN DOME OF SPHERICAL CURVATURE A=APEX

WILLIAM HARVEY

the pattern is made to repeat around the dome, and may be as small as one thirty-second of its circumference.

The dome of the Casa-de-Pilatos is an example of this more usual kind, and is mentioned first because of its simplicity of arrangement, although in fact it is a rather poor example of a geometrical pattern. Its shortcomings include a certain stringiness, due to the ease with which the setting-out lines may be detected, and an irritating repetition of star-like forms either mulcted of a part of their rotundity or swelled out beyond a complete circle. In fairness to the Saracens it should be stated that this dome belongs to the Mudejar period, and was executed under Christian direction in *c.* 1519 A.D. The pattern is composed of projecting ribs with little coffers between preparing the way for the still deeper modelling of Renaissance work; the brilliant colouring in gold, black and white does much to redeem the indifferent pattern, and the dome, taken as a whole, has received, and deserves, high praise.

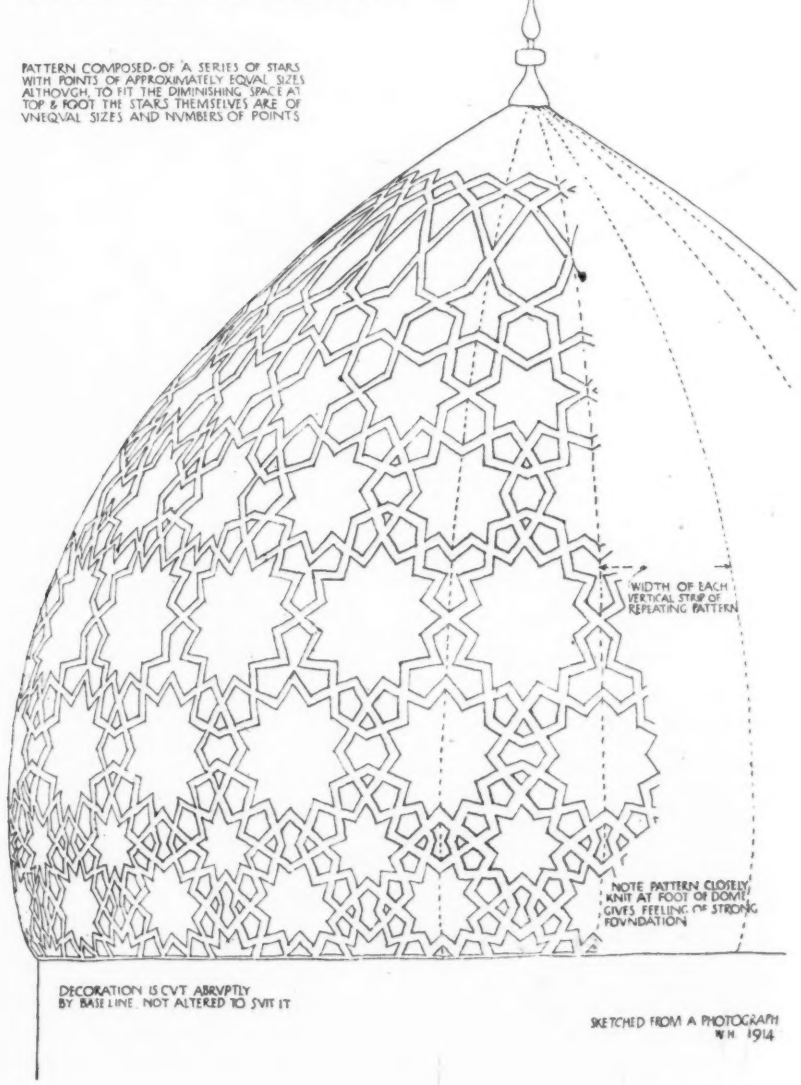
The Persian dome obeys the same general principle of setting-out, but in many respects exhibits a more masterly handling. The starry forms yield gracefully to the diminishing area, and preserve their symmetry instead of vainly trying to adhere to an equal dimension and suffering amputation in consequence. It may be considered that the Persian dome errs on the side of spottiness to about the same extent as the Spanish dome does in the matter of its wire-drawn lines, but the fine adaptation of design to situation wins a point for the Persian pattern.

Included among those designs which tend upwards to an apex, is the early Renaissance example of the Pabell n de Carlos V in the gardens of the Alcazar at Seville. Here a meagre and indifferent pattern, considered from the point of view of geometrical decoration, has been rendered entirely charming by the beautifully-moulded coffering of the surface. The design shows the last flicker of Moorish influence affecting the revived Roman style that was being imported from Italy. Examples of this apex-seeking type might be quoted in hundreds, especially if the many simple, ribbed, melon-shaped and chevron-patterned domes of Cairo were included, or if the more flowing kinds of arabesques based upon a reticulated centre-line framework be allowed to pass as geometrical. Perhaps the system already described is the one that contains the finest possibilities of architectural beauty, and certainly the finest existing domes are numbered among its followers—a fact that is to some extent accounted for by the stilted, swelling, and pointed outlines of the domes themselves, which practically demanded that the surface decoration should climb towards the summit.

For domes of more nearly hemispherical shape the second system may perhaps offer as great advantages, and in the example from the Court of the Lions of the Alhambra a great effort has been made to avoid the apex-seeking type of pattern. It is true the apex is marked by a variation in the design, but there seems some probability that the change was brought about for ease in design rather than from preference. The dome has, in fact, been cut in four so that the pattern of each quarter repeats in the others. Large eleven-pointed stars are packed into the surface, and give very much the effect of an equally-spaced decoration with radiations in all directions, equally as apparent as those making for the crown of the vault. The design is a masterly one, and except for a slight tendency to "lininess" (that characterises Hispano-Mauresque geometrical patterns) is both suitable and beautiful, and embodies in a large measure the principle of equal decoration in all parts as befits the homogeneous-shell ideal. An added interest is given to the design by the introduction of a little judicious fudging towards the bottom; the stars near the base of the dome are unequal sided, and some of the lines of the pattern are arbitrarily cut short before reaching the base. This is an offence against the rules of the game, the theory being that the lines are illimitable and if stopped at all must be stopped by the enclosing border and not before. The diagram here given consists only of the centre lines of the small wooden ribs interwoven about the surface. The ribs themselves are moulded and the minute panels elaborately carved in low relief, the whole surface being further decorated in rich colours and gilding.

Although ceilings rising from square or octagonal bases can hardly be called domes, they may be mentioned here as indicating how closely the Moors in Spain approximated to the discovery of a scientific method for setting out their geometrical patterns upon truly hemispherical domes. The Hall of the Ambassadors in the Alhambra is roofed with a square "dome" of approximately 40 ft. side. Rising from the cornice in the shape of a pyramid, the sides of this curious roof are bent inwards to a flatter

A PERSIAN DOME EXTERIOR COLOVRED DECORATION


PATTERN COMPOSED OF A SERIES OF STARS WITH POINTS OF APPROXIMATELY EQVAL SIZES ALTHOVGH, TO FIT THE DIMINISHING SPACE AT TOP & FOOT THE STARS THEMSELVES ARE OF VNEQVAL SIZES AND NVMBERS OF POINTS
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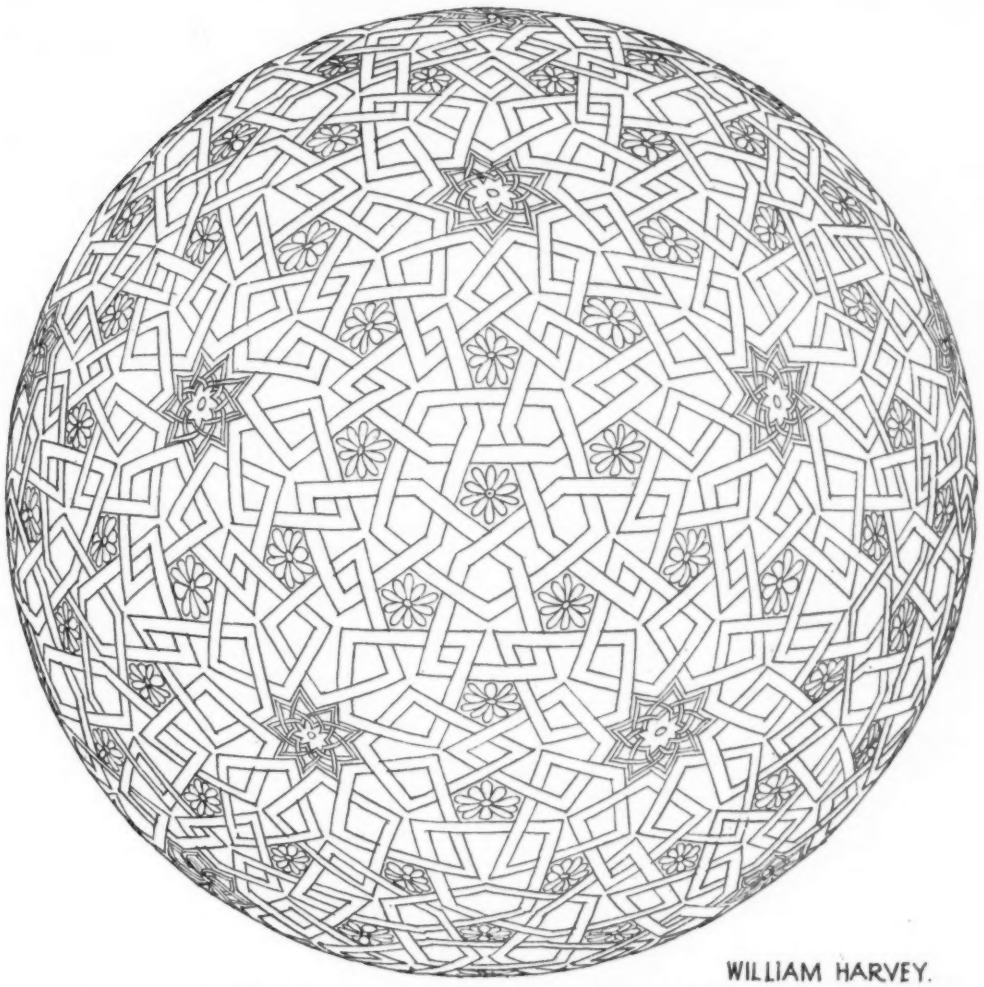
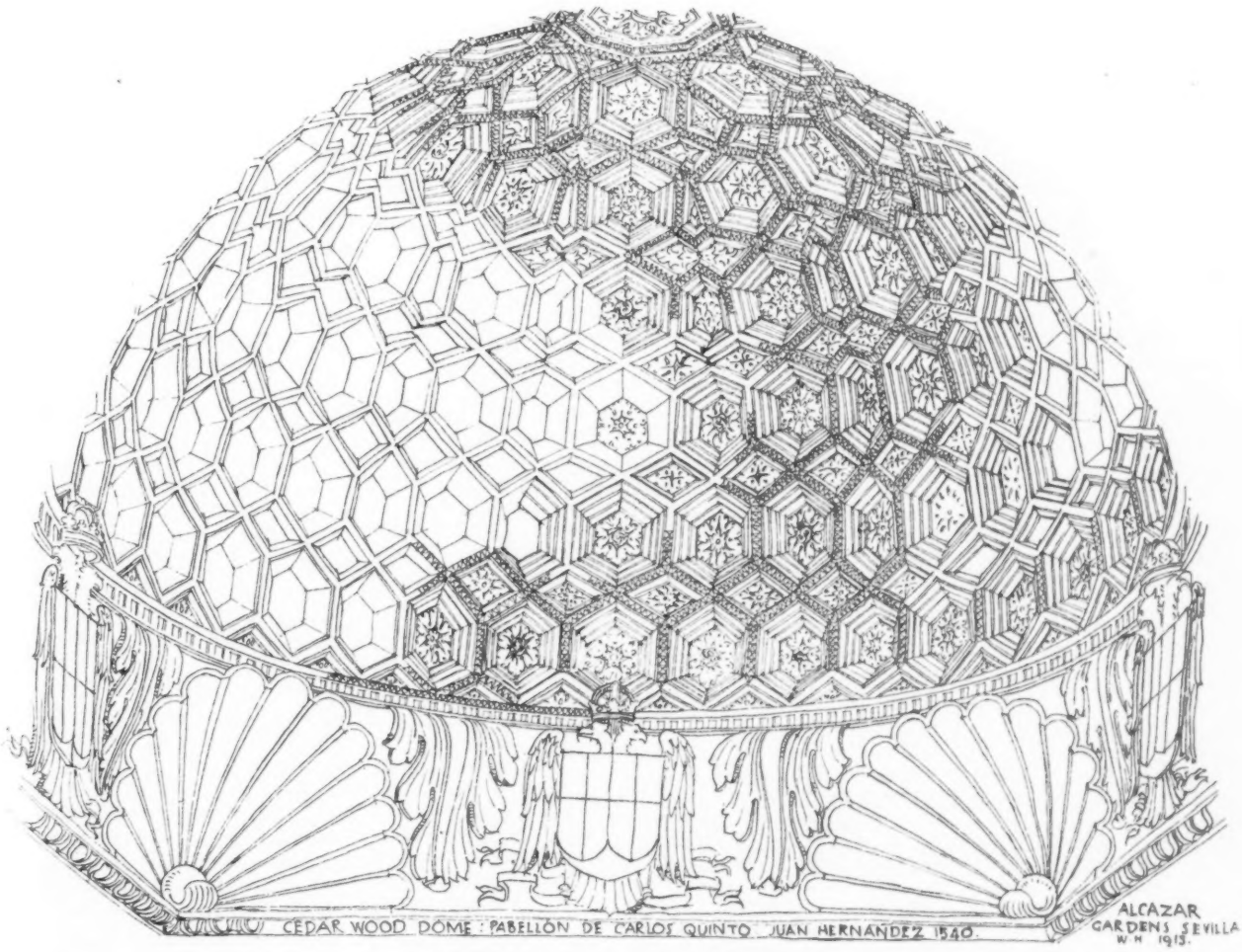
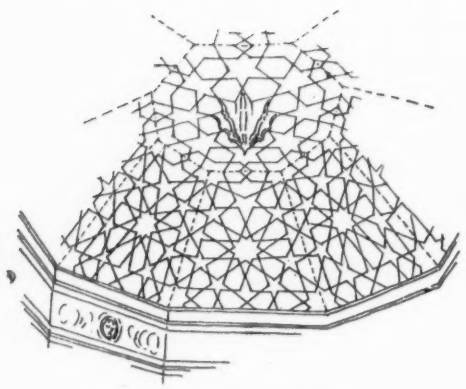


WILLIAM HARVEY.

GEOMETRICAL PATTERN ADAPTED TO REPEAT EQUALLY AROUND A SPHERE - THE STARS ARE STATIONED AT THE ANGLES OF AN INSCRIBED DUODECAHEDRON.



Geometrical Decoration of Domes.



Alcazar, Seville.

[Ceiling in the form of truncated octagonal pyramid with pattern adjusted at mitres.]

angle some 8 ft. up and again at a higher stage, the summit being crowned with a square flat soffit with a small ornamental dome. Over all the planes or facets a geometrical pattern has been spread with a design adapted to return and flow smoothly on to the adjoining planes at every angle, and although this feat is by no means a difficult problem for a geometrician it produces an almost magical effect of charming precision. It will be understood that with every different inclination to the horizontal of the ceiling surfaces the pattern has to be worked out afresh to flow around the mitres at the corners of the square plan. Diagrams of the patterns are given in Owen Jones' celebrated work.

In a minor chamber of the Alcazar at Seville, a simple and more dome-like roof springing from an octagon plan and truncated at the top by a flat soffit exhibits the same adjustment of the pattern to the angles and borders of the separate planes composing the whole. The ribs in this case have a relief of some inches, and like the dome of the Casa de Pilatos, the colours employed are principally black and gold instead of the more minute and elaborate colour decoration of the earlier Moorish period. This skill in devising patterns to fit definite shapes is a special characteristic of Moorish work in Spain, and brought upon the designers the wrath of John Ruskin for their servility in meanly submitting to the limits instead of boldly selecting a fine pattern and allowing it to hit as it would against the sides and corners. It must be confessed that some of the patterns in the Alhambra, most frequently those of the tiled Azulejos, err in this respect, unpleasing combinations being permitted between a pleasing radiating pattern in the centre of the field and the straight lines where the pattern, all too faultlessly, approaches the edge.

This worship of the border introduces a defect into Moorish patterns already remarked upon in the Casa-de-Pilatos' dome, and in many otherwise excellent schemes. The skeleton of the pattern is too easily seen and the surface is split up with the suggestion of long straight lines which single themselves out for attention to the detriment of the general effect. The Persian and Syrian examples, both taken at random, show the greater beauty of a pattern in which the lines continually suggest shapes and areas rather than unbroken lengths.

It will be noticed that in all the illustrations hitherto mentioned only the dome from the Court of the Lions makes any attempt to repeat a given pattern around and about a hemispherical surface with any equality of spacing, and that even there a certain amount of compromise has crept into the scheme. Considering the marvellous skill exhibited in arranging and blending the patterns on the different planes or facets in the Hall of the Ambassadors and other roofs of the Alhambra it is surprising that in the Court of the Lions dome the rule-of-thumb method of setting-out should have been employed some twenty years later. It would seem almost incredible that the geometry-loving Moors could have been ignorant of the advantages of subdividing their spherical surfaces in accordance with the angles of some regular polyhedron and adjusting the minor details of the pattern to the spherical surfaces included between the points so found. How easy this course would have been is shown by the drawing of a hemisphere decorated with a Saracenic pattern taken from a school in Jerusalem and adapted to repeat upon alternately hexagonal and pentagonal forms instead of hexagonal forms alone, as is the case in the original, which decorates a plain surface. The simplicity of the method is made the more apparent by the fact that the design for the decoration of the hemisphere was worked out as a geometrical problem quite independently of the charming Spanish domes since measured.

THE LONDON SOCIETY.

COAL SMOKE NUISANCE.

A meeting of the London Society was held on Friday last week, at 18, John-street, Adelphi, presided over by the Right Hon. Lord Newton, P.C. He said that a report of the Smoke Abatement Committee, of which he was the Chairman, had been issued a short while ago, but no one took any interest in the proceedings. The Committee sat in London; eminent people attended and gave information regarding dirt, waste, the destruction of buildings, and the effects of smoke on health and vegetation; people were received who complained of the intolerable existence they were obliged to live in the smoke-polluted atmosphere, and yet it all passed without the slightest notice being taken. The Committee remained in obscurity until recently, when an influential deputation waited upon Sir Alfred Mond, and represented that legislation should be negotiated by the Government in accordance with the recommendations of the Committee. He thought all sensible persons were agreed that no legislation should be embarked upon that would adversely affect the trade of the country. In spite of the fact that we prided ourselves on our cleanliness, England was the most dirty country in Europe, if not in the world, but considerable improvement could be brought about without any real trouble or expense, as such a condition was largely caused by the indiscriminate use of raw coal for domestic and industrial purposes. It was not the law on the subject of smoke which was to blame so much as the failure of the authorities to enforce it.

Dr. C. W. Saleeby, F.R.S.E., F.Z.S., then delivered a lecture on "More Light on London, or the Coal Smoke Curse and the Restoration of Sunlight." When in New York three years ago, the lecturer said he saw a smokeless metropolis with pure air, and buildings that looked as if they had been just washed, and he was ashamed to think of London. New York had been cursed with smoke until 1905—as London was at the present time—when the Government started a vigorous campaign against consumption, but realising that while preaching to the people it also had a great duty to perform, it forbade them to make dense smoke under penalty of prosecution, with the result that in fourteen years—1905 to 1919—the death rate from tuberculosis had been reduced by half, although no new measure had been imported except the restoration of sunlight. The next great task of hygiene in this country, he said, was the restoration of sunlight to urban dwellers, now mostly blackened, bleached and blighted in slums and smoke. A committee had at last been formed to investigate sunlight. In comparing some of the cities of America and Germany with our own, Dr. Saleeby said that in Pittsburg steps were being taken to put an end to the smoke nuisance, and Essen was practically clean, while in Sheffield it was said that if the people would not allow themselves to be smoked to death they would be starved to death. In New York it was no longer necessary to send consumptive patients to Arizona and other places, because the light and air in the city were so good. There were 12,000 deaths in our country annually from "surgical" tuberculosis, and 1,000 per week from all kinds.

The following resolution: "That this meeting welcomes the final report of Lord Newton's Committee on Smoke Abatement, and calls upon the Ministry of Health to introduce legislation in accordance with its recommendations," was carried unanimously.

THE STATE ARCHITECT.

By an Ex-Official.

Mr. Maurice Webb's address at Liverpool, on "Official Architecture," has raised the interesting point as to whether an architect is justified, from the standpoint of artistic values, in accepting an official salaried post. Taking a broad view of the subject one may say that the Government's function is to govern, and that the duty of citizens is to support and assist the Government of the day; but, if they do not approve of its methods, they can, of course, adopt constitutional means to effect a change of Government or of policy. Direct action is not constitutional, and to suggest that architects, as a profession, should refuse to assist the Government is to propose direct action, and it may therefore be assumed that the suggestion is that the more conscientious architects ought not to accept such posts; it has also been suggested elsewhere that no architect would willingly undertake such work unless compelled to do so by financial considerations. This is an extraordinary fallacy. If the Government intends to build hospitals, schools, or houses, can it be supposed, for one moment, that it would give up its intentions merely because competent and qualified architects refused to help? It is manifest that such an attitude on the part of qualified architects would only lead to the employment of unqualified men, or of men who were not architects at all. If Government building is to be undertaken, it is the duty of architects to do all in their power to make it a success; the alternative is to sacrifice the good of architecture, and of the country as a whole, to their personal inclinations.

A prejudice against bureaucracy is natural, and possibly wholesome, but it cannot be too clearly understood that no boycott of Government work on the part of architects could influence the building policy of the Government by one iota; it could only have the effect of reducing the prestige of the profession and the architectural value of Government building, and consequently the value of architecture as a whole. Inigo Jones and Wren were both salaried Government servants, but it has never been suggested that their art suffered as a result.

There is, theoretically, no system of remuneration that is free from criticism; whether payment is on commission or by fixed salary, each method of payment depends upon the honour and integrity of the architect, and it is disheartening to those architects who are in Government service to feel that they are, in a sense however slight, regarded as mercenaries by those of their profession outside. They are all working to the same end—the good of architecture—and any invidious distinction can only tend to weaken the morale of the profession. To criticise the Government's policy is legitimate, but it is another matter to slight those who are powerless to change it, but are doing their best in the interests of the country's architecture.

STREET ARCHITECTURE.

By V. M. CHRISTY.

CHEAPSIDE & OXFORD STREET.

The treatment of streets containing retail stores occupying a whole building or a whole block is a problem of great importance in a modern town, and one which never confronted the older architects. This kind of building offers an interesting contrast to the small shop occupying merely the ground floor or a portion of it, the upper floors being used as a dwelling-house or as other business premises unconnected with the shop.

Cheapside, on the one hand, and parts of Oxford-street on the other, offer good examples of this contrast. In the one case, in former days the shopman lived above his shop or near his "shed," probably making up his books of an evening by candlelight, with his family and the apprentices about him. In the other case, whole acres are covered with showrooms and counting-houses, all parts of one large concern, under a board of directors and managers of different sections.

Cheapside has even now an old-time air, in spite of the modernness of most of the buildings. There is something in the way its shops jostle one another that conjures up a vision of the chapmen at their doors, 'prentices loitering on their errands, housewives hastening back or forth, bargaining for capons in Poultry and then wending their way homeward, by way of Panyer-alley, perhaps, through the Newgate. Here, as elsewhere in the ancient City, it is noticeable that there is a tendency to shun Classic types and to maintain the mediæval tradition symbolised in the Guildhall. The grotesque figures above the clock-maker's, that harmonise so well with the spirit of Cheapside, are at their task (the fascination of watching them not limited to the young and the idle), chiming the hours slowly and deliberately, as Time moves on with his measured tread. Though he may do great execution in other streets, in this one Father Time does it gently and leaves no unsightly scar. He rather builds anew on the old foundation, as Wren did with St. Mary-le-Bow, leaving the Roman-Saxon-Norman crypt to bear its part in the new edifice. And, just as Wren's church, with its Classic lines, had inevitably to end in a spire and a grotesque animal, even so the curious modern buildings with their impassive features have to concede something to the spirit of the place; they, too, have here and there a projecting animal mask, descendant surely of the gargoyles of Gothic days. Even the Classic types here seem to do what they can by light touches judiciously placed to mitigate their regularity, but the greater number of the buildings are frankly mediæval in character, however modern in date. Typewriter shops, picture dealers, sports outfitters, booksellers, sweetshops, now take the place of the sellers of bread or milk, the mercers and the ironmongers, the grocers (whose hall was not far away); but it is still the street of the chapmen. Indeed, two homely apple-women are even now taking up their pitch at the corner of Gutter-lane, which slithers into Cheapside like a snake. At the corner of Wood-street, where the pleasant green of the plane tree stands unchallenged, there gleams already the red and yellow of the tempting fruit piled high in the apple-women's baskets. Such pleasant sights must surely have met the eye of many a boy in autumn long before 1666. When the Great Fire passed by, it evidently left untouched the warm red bricks of the house at the corner of Friday-street, which proudly boasts its survival; while the old St. Mary of the Arches was swept away. Except for this building, the old Cheapside lives only in street names, and perhaps in the case of some of them it is as well that they are but names. We read that Honey-lane was so called, not because of its sweetness, "being very narrow and somewhat dark, but rather of often washing and sweeping to keep it clean." There is yet much beauty to be seen in this old shopping street, where various offices occupy the place of the former shopkeepers' dwellings. Not least among its charms is the glimpse now afforded through a gap in hoardings, as one leaves this street with the apple-women, the spire and the trees, of the Goldsmiths' Hall.

Taking Oxford-street as an example of the modern shopping centre, one notices how the large retail stores that now play so important a part in the life not only of London but of the provinces have developed each its own type. For instance, the large shops where drapery and ladies' frocks and hats are displayed have to express a different character from that which shines forth from the goldsmith's emporium. A building in Oxford-street sometimes much decried is seen to be eminently expressive of its function; no one would expect to buy within its walls either postage stamps or Paris millinery, but it appropriately shelters household furnishings, electro-plate, and grand pianos among the least of its undertakings. One of the most suitable of the buildings for a large drapery shop is found in a quiet dignified adaptation of the François Premier type, which somehow radiates the character of the wares—tasteful and attractive, with no undue extravagance in any sense. Another large shop which offers goods very similar in many respects expresses upon its walls and roofs the slightly oriental character distinguishing many of its wares. A dome here, a balcony there, a cupola or two, and the different individuality is at once evident in this shop whose general purpose is so like that of a dozen others in its neighbourhood. Other large buildings housing a greater variety of merchandise—foodstuffs, perhaps, as well as ribbons and laces—have to be more general, and therefore usually similar in appearance, though at the same time largeness and richness are apparent.

Perhaps it is in this external expression of function that a solution will be found to the problem which deserves more attention than is generally accorded to it, namely, the question of "labels" on business buildings. It may be objected that a building designed for a particular function may sooner or later be required for some totally different purpose. If this is a contingency which is really a considerable factor, then perhaps the solution lies in a reversion to the art of designing trade signs. Something, however, must surely be done. Why, for instance, should one shop façade of unobtrusive but pleasant Renaissance type be disfigured by strips of harsh black and white lettering occupying the whole of the frieze, and spread in patches over other available spaces, while not far away another building, quite different in design but similar in general character, has its beauties by no means lessened by a bold chain of gilt lettering across its brow in such a way as neither to obscure the architectural details nor to usurp their place? It is surely very doubtful whether any greater commercial benefit accrues from the restless reiteration of the firm's name and wares than from the briefer statement in well-shaped lettering in keeping with the quality of the building.

In the matter of trade signs it is a curious commentary on present-day life that one of the very few that survive in common use, and which is found equally in the West-end and in the City, is the sign of the Three Balls. There is no reason why this should continue to be true. The present hurried generation, in the matter of its news of topical events as well as of its novels and plays, prefers to a large extent to read by pictures rather than by letters. It should be possible, therefore, to achieve success in a revival of the simpler methods of olden days, when letters held meaning for the few and a trade sign was understood by all. The movement in favour of village signs has aroused interest which might be extended to the subject of trade signs. By some such movement as this street architecture may even yet be rescued from disfigurement and be given its full value.

Royal Fusiliers' Memorial.

It has been decided to erect at Holborn Bars the Royal Fusiliers War Memorial, by Mr. Albert Toft. The statue (in bronze) shows the figure of a soldier, his rifle at the trail, standing, 8 ft. 6 in. high on a 16 ft. high stone pedestal, as if guarding the City.

Design submitted in the Paisley War Memorial Competition.
By Mr. Jackson Smyth and Mr. R. H. Gibson, M.R.I.A.I., Architects; Mr. James Stouppe, Sculptor.

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ILLUSTRATIONS.

Offices for Vauxhall Motors, Ltd., Luton.

This building was designed for an irregular site adjoining the Company's extensive works at Luton, and comprehends the usual requirements for head offices of an engineering manufacturing company.

As it was necessary to make use of the whole site to provide the floor areas required, the principle adopted was to flood the centre of the building with light from a large lantern set in the flat concrete roof, over an open well in the first floor, with a gallery running round giving access to stairs and to the various offices arranged against the outside walls. The floor of the well, at ground level, is allotted to the accountants, with access under the gallery all round to other offices and departments. The partitions separating the various offices, where not blacked in on plan, consist only of panelled partitions 7ft. 8 in. high.

The whole of the woodwork (except the mantelpiece and fittings in the board-room, which are English walnut) are of English oak, and the whole has been left from the tool and once wax polished.

The architects are Messrs. H. B. Creswell and W. A. Forsyth, FF.R.I.B.A., and the general contractor, Mr. A. Turner, of London-road, Luton. The whole of the joinery was supplied and fitted by Messrs. J. P. White, of Bedford. The work was begun during the war and completed early in 1919.

Halifax War Memorial.

We illustrate this week a perspective of the design for the Halifax war memorial, by Mr. H. Scott Davies, of Manchester, which was selected by the Halifax Memorial Committee in the recent competition.

The design takes the form of a cenotaph, and is being constructed of Bolton Wood sandstone, with a pierced band of bronze above the base. The assessor was Mr. W. E. Potts, of Manchester. The number of designs submitted in the competition was 60. The site for the memorial is in the Belle Vue Gardens, Halifax.

Stafford War Memorial.

This cenotaph is designed to fit an island site at the junction of three roads on the principal thoroughfare from the town to the station. Owing to limitations of the site, viz., the width of roads, &c., very little spread could be given to the footway surrounding the cenotaph, but ample standing room has been secured at each end of the memorial. It is proposed that the cenotaph should be constructed entirely of the best Whitbed Portland stone with a backing of brick or concrete. The total height from pavement level is 24 ft., and the shaft measures 9 ft. 1 in. by 6 ft. 7 in. at the bottom. The estimated cost of the complete memorial, including a bronze plaque containing the names of the fallen, is £1,500.

The architects are Messrs. Sandy & Norris, of 22, Greengate, Stafford.

Building Exhibition Lay-out and Stand Competition.

We give this week some further designs submitted in the Royal Academy Ateliers Building Exhibition Lay-out and Stand Competition, organised by the R.A. Ateliers in conjuncton with Mr. H. Greville Montgomery, Organiser of the Building Trades' Exhibition. In our last issue the name of Mr. John Allcorn, whose design was awarded a "Mention" in the Lay-out Competition, was mis-spelt.

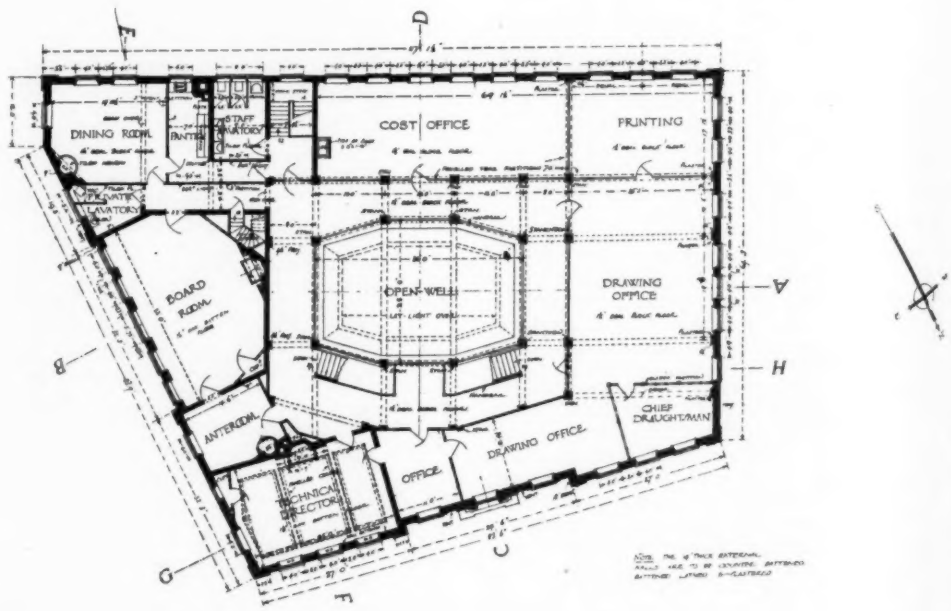
EXHIBITION NOTES.

THE ROYAL WATER COLOUR SOCIETY.

At the present admirable exhibition of the Royal Water Colour Society there is a distinct evidence of a broad and restrained method which is far removed from the old style of sugary stippling and conscious effort. This is very noticeable in Nos. 20, 23, 24, 29, 32, 37, 42, 43, 54, 58, 61, 62, 67, 70, 85, 88, 90, 96, 116, 118, 133, 145, 163, 174, 187, 205, and others. This is, indeed, a good list, and we think it must indicate a feeling of greater sincerity and of the "Art for Art's sake" we so vitally need. We have not space to indicate all the things which appeal to us. Mr. Lamorna Birch has seven drawings, and the brilliant colour and dexterous handling which we associate with his name have given place to such sobriety as the "Page of History" (32), "Spring Woods" (88), Nos. 116 and 157. Even in "The Old Deveron Bridge" (173), which is more like his older self, there is a very pleasing control over its brilliance of colour. "The Halnoker," Sussex (163), by E. T. Holding, is a charming drawing with a scheme of colour which is very satisfying. The skill of real water colour painting is seen in the scintillating lights of Harry Watson's "Moorland, North Wales" (74), and the "South Downs at Heyshott" (70). The low-toned colour tells admirably in the charming landscape. In "A Yorkshire Farmstead" (67), by A. Reginald Smith, the distance and modelling of hills contrast effectively with the middle distance and foreground. Oliver Hall's drawings (24, 29, 35 and 62) are notable, as one expects, but the latter has a pleasant glow and light which we sometimes long for in his admirable drawings. There is a feeling almost of nobility in the President's fine drawing of "Le Puy de Dom," which is something of a variant from the well-known Hughes-Stanton. There are some admirable architectural subjects, such as J. H. Lorimer's "Monument to Watteau" (44), R. W. Allen's "Capri" (39), Albert Goodwin's "Canterbury" (98), W. Russell Flint's "Spanish Interior" (4), T. M. Rooke's "Angel Choir, Lincoln" (175), and his delightful little drawing of "Old Chiswick" (156). A fine piece of colour is "The Little Pierre" (64), by R. Anning Bell; and next to it is a brilliant picture of blues and greys, "On the Ledr, North Wales," by Harry Watson. Two able pictures by Jas. Paterson are Nos. 59 and 65. But the number of drawings which do not claim a notice are remarkably small.

THE R.B.A.

In the galleries of the R.B.A. will be found rather more than usual interest for the architect. Mr. Barry Sittar has several telling impressionist pictures in his strong handling of greys. Though the drawing is loose and rough, the pictures give vivid and truthful impression of St. Mary-le-Strand, the Temple, St. Paul's from the river, and the Wellington Monument. More precise and careful in detail, but drawn in a broad and simple way, are the very admirable studies by J. Frederick Wilson of a lady chapel in Westminster Cathedral, and a portion of the arcade in Ely Cathedral. The Fountain, Taormina, is a telling water colour by Walter S. S. Tyrwhitt. The nave of St. Paul's is well illustrated by E. M. B. Warren; the light and colour in the vault are very well rendered, but the colour in the pavement jars a little. Two pleasant sketches in watercolour by W. E. Riley illustrate The Palais de Justice, Paris, and Corfe Manor House, but we like best his clever blue and silver beach scene. There are two or three good contributions by F. Hamilton Jackson. The five decorative landscapes by Fred. F. Foottet, two or three characteristic works by Leonard Richmond, R. Littlejohns, P. H. Padwick, and a very convincing portrait by the President, S. J. Solomon, R.A., are the most noticeable of the other works to us. The pictures in the large gallery have the advantage of very satisfactory hanging.



FIRST FLOOR PLAN.

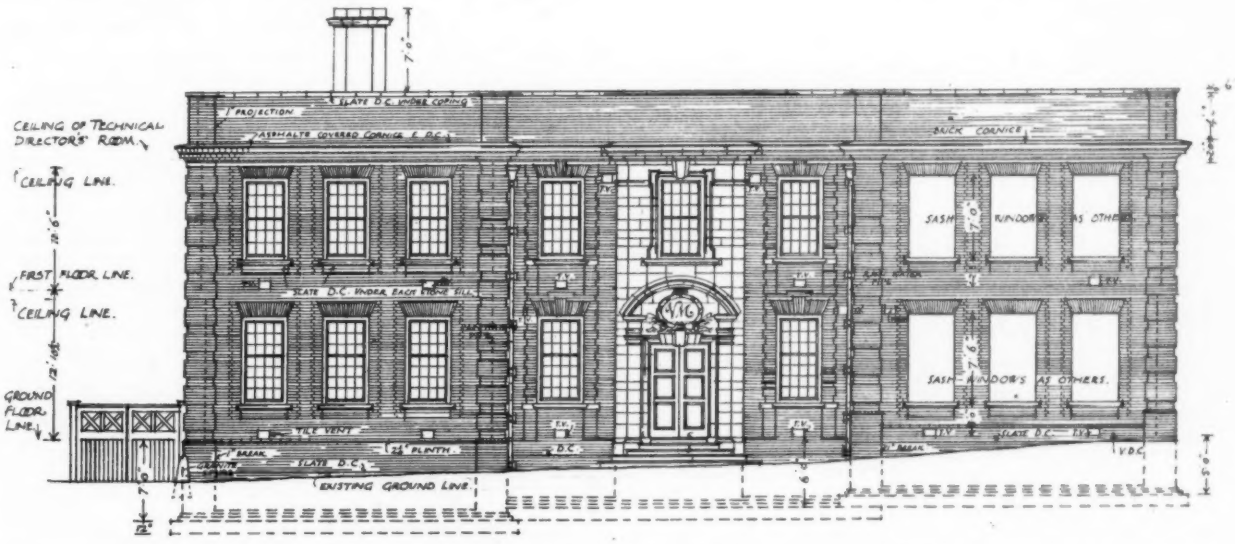
SCALE 8 FEET TO 1 INCH

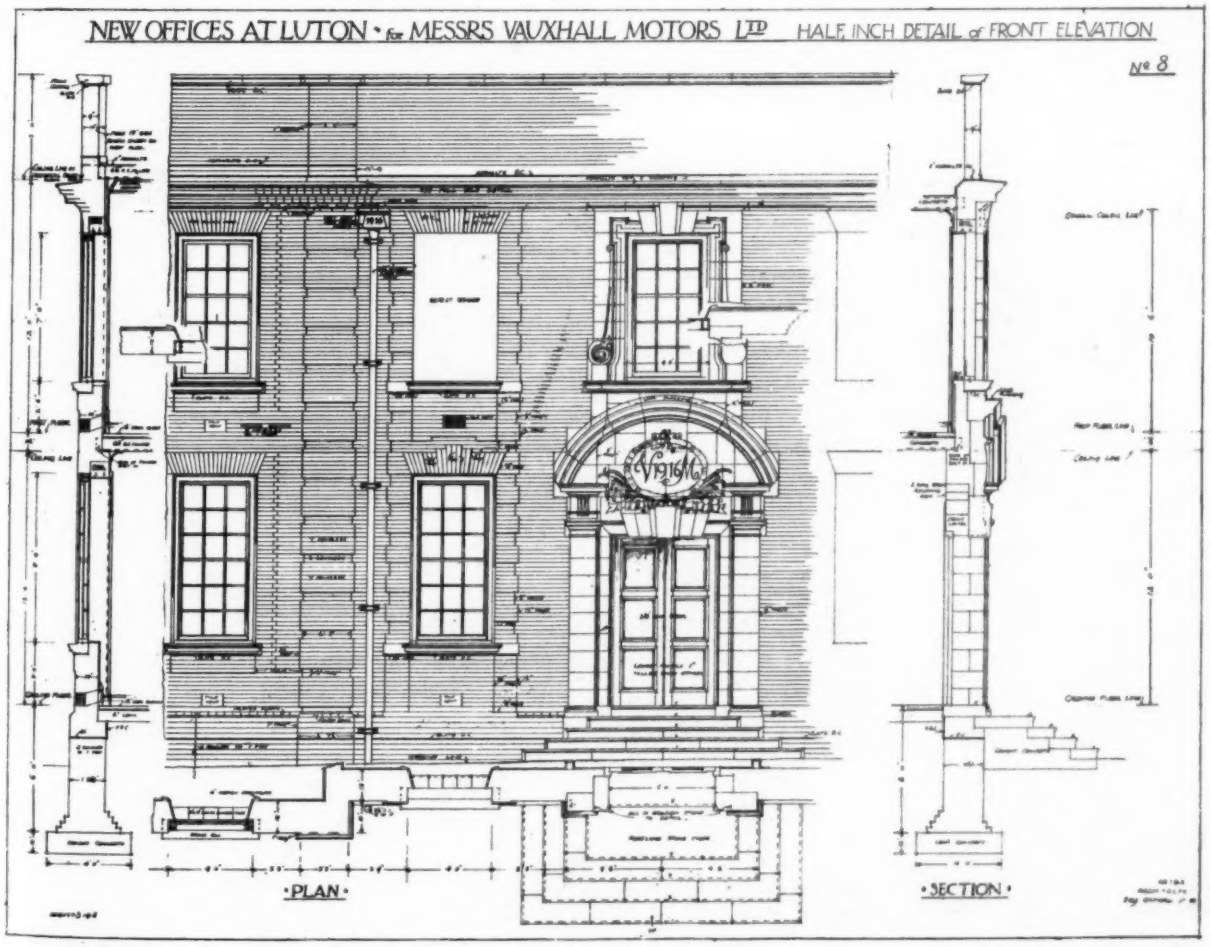
New Offices, Luton.

MESSRS. H. B. CRESWELL & W. A. FORSYTH, FF.R.I.B.A., Architects.

THE TEMPLE OF THE GODDESS TANIT, CARTHAGE.

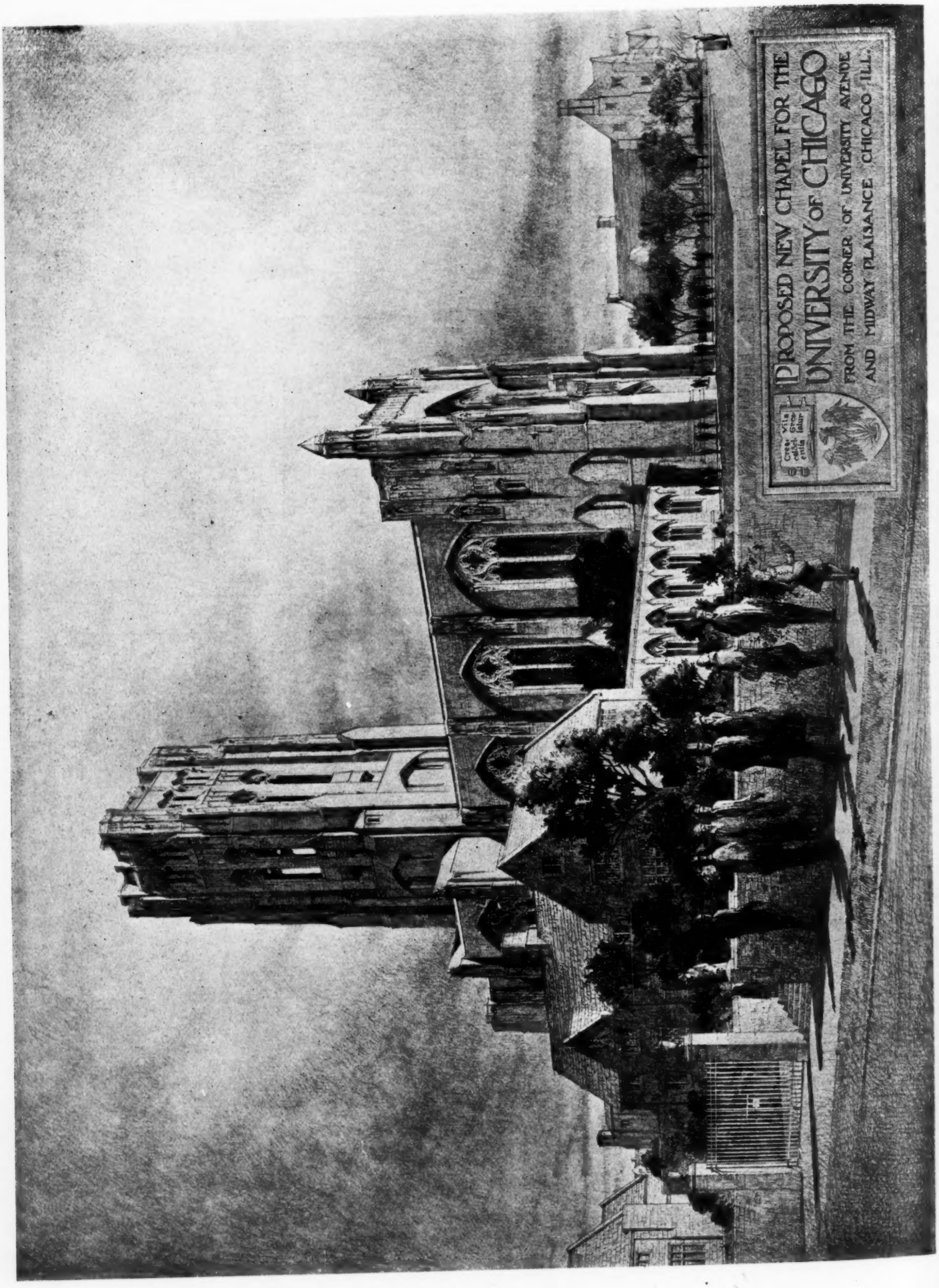
The Abbé Chabot, a member of the Académie des Inscriptions et Belles-Lettres, who has made an extensive study of the languages and antiquities of the Chaldean-Phœnician era, has recently communicated to that body a very important account of the discovery at Carthage of the great Temple of the Goddess Tanit. M. Icard, in exploring the ruins of Old Carthage, lying to the west of the port of Tunis, has recovered a number of *stelæ* bearing Punic inscriptions, belonging to a very large temple of which the débris of its colonnades and other fragments testify to the original destination of these records. The Abbé refers to the discovery about forty years ago by Père Delattre, when exploring the ruins of Tunis, of numerous similar inscriptions. The extensive dimensions of the ruins, the various Punic inscriptions unearthed among them, and all the historic documents which are known to archæologists concerning the site of the magnificent Temple of Tanit, preserved by the Romans, and still sacred to the mysteries of Carthaginian Astarte, strengthen the belief that at length the true area of the celebrated temple of the Phœnician goddess has been located. This temple, which was one of the glories of Roman Africa, was, in like manner, preserved by the early Christians, who transformed it into a church, and eventually it became lost to view about the end of the fourth century after Christ. The new find is a valuable one, and well rewards the intelligent activity exhibited by French antiquaries in the search for Punic and Roman monuments in Northern Africa.



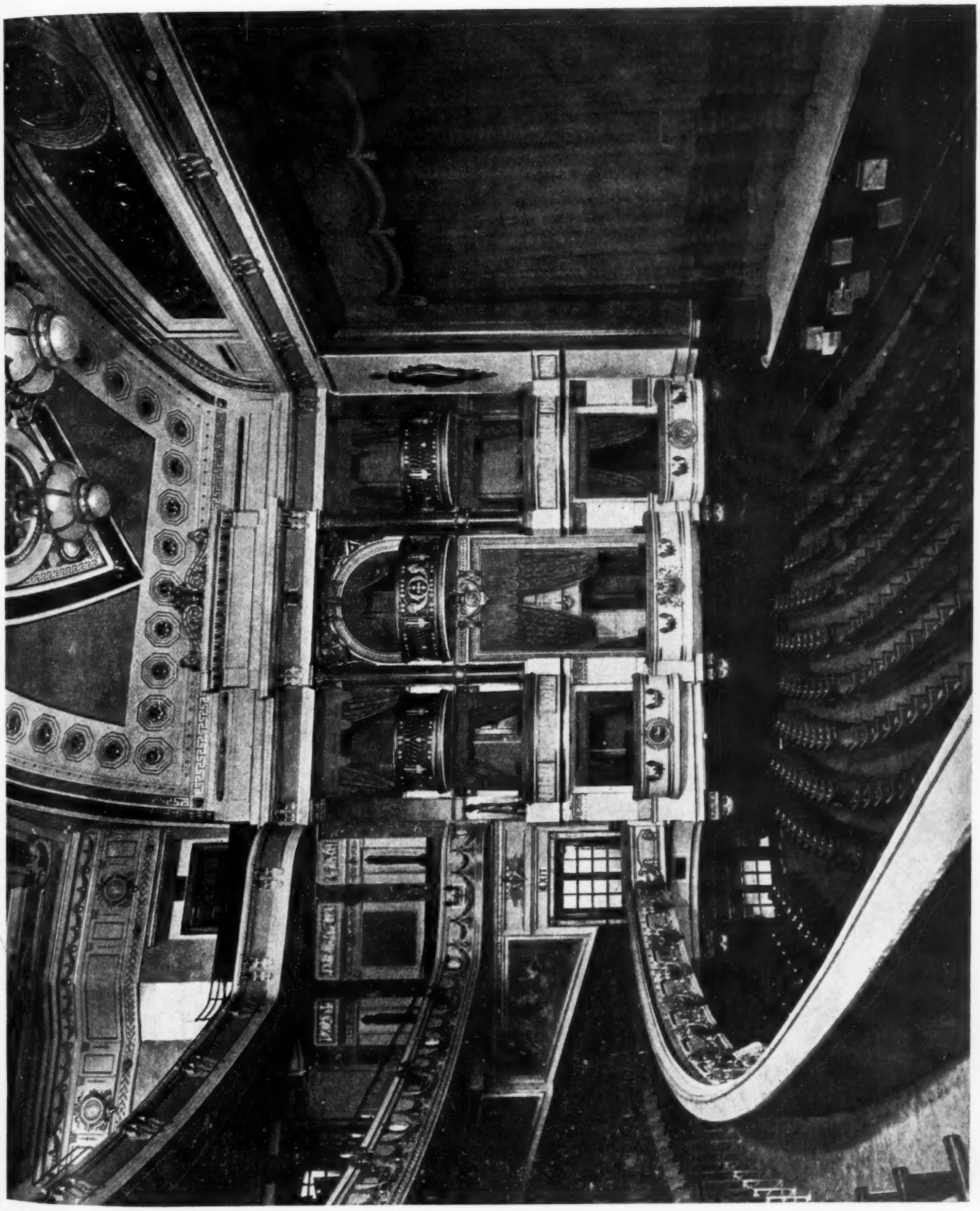


New Offices, Luton.

Messrs. H. B. Creswell & W. A. Forsyth, FF.R.I.B.A., Architects. (*See p.* 556.)


PROPOSED NEW CHAPEL FOR THE
UNIVERSITY OF CHICAGO
FROM THE CORNER OF UNIVERSITY AVENUE
AND MIDWAY PLAISANCE CHICAGO ILL.

Mr. Bertram G. Goodhue, Architect.



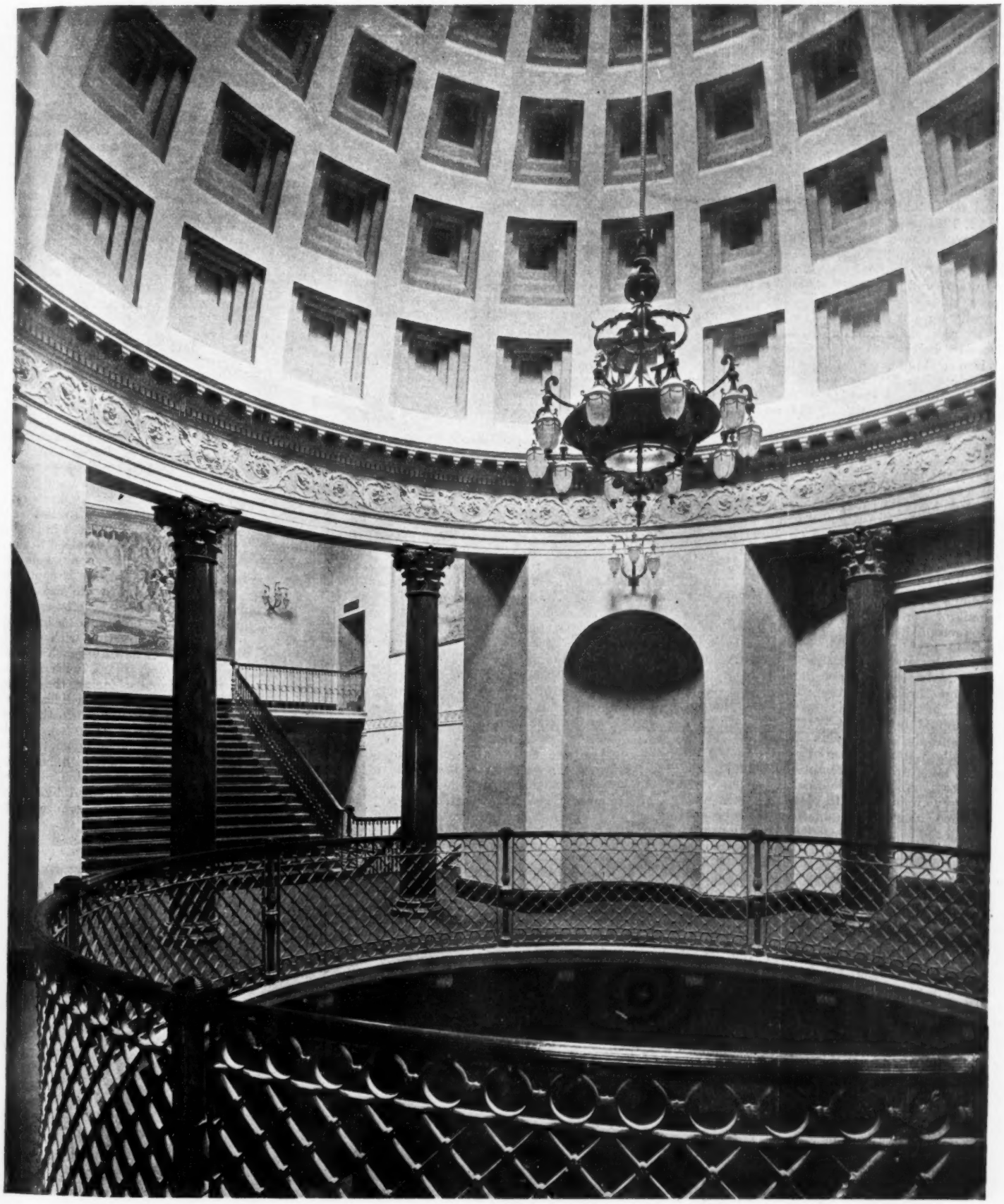
Reconstruction of Drury Lane Theatre: The Auditorium.

Messrs. Walker & Jones and Mr. Robert Cromie, A.R.I.B.A., Architects. (*See p. 558d.*)

Mr. Bertram G. Goodhue, Architect.

Reconstruction of Drury Lane Theatre: The King's Staircase.

Messrs. Walker & Jones and Mr. Robert Cromie, A.R.I.B.A., Architects. (*See p.* 558*d.*)



Reconstruction of Drury Lane Theatre: The Rotunda.

Messrs. Walker & Jones and Mr. Robert Cromie, A.R.I.B.A., Architects. (*See p.* 558*d.*)

THE RECONSTRUCTION OF DRURY LANE THEATRE.

We give this week some illustrations of the Theatre Royal, Drury-lane, as reconstructed during the past twelve months from plans prepared by Messrs. Walker & Jones and Mr. Robert Cromie, A.R.I.B.A., Mr. Adrian Collins, A.M. Inst. C.E., as the consulting engineer.

Drury-lane Theatre, which was first opened on May 7, 1663, by Charles the Second, was rebuilt by Sir Christopher Wren and reopened on March 26, 1674; rebuilt from the design of Henry Holland and reopened March 12, 1794; rebuilt by Benjamin Wyatt and re-opened on October 10, 1812; partially rebuilt in 1894, 1904, and 1908.

The reconstruction has included the total removal of the old auditorium and massive circular walls while retaining the existing roof intact, and the conversion of the theatre from a three-tier to a four-tier house. The old walls were 3 ft. 6 in. thick from foundation to roof, and the old tiers built up of successive layers of stone and concrete on cast-iron columns. The demolition of these alone necessitated the removal of thirty thousand tons of hard rubbish from a congested site. The grand vestibule, the rotunda, and the royal staircase are practically unchanged except for the decoration.

Since the days of King Charles II "Old Drury" has been an institution to Londoners. Yet, in spite of the many times it has been redecorated and "improved," it has hitherto remained unreformed where reforms were most necessary. To the regret of all concerned its many attractions had long been discounted by a very unenviable reputation for coldness, draughtiness, and the lack of those pleasant conditions which are essential to the full enjoyment of the play.

The present theatre was designed by Benjamin Wyatt in 1811 in the Classic manner then in vogue in England. In harmony with the lines of this early 19th-century building the new decoration throughout the theatre has been designed in the Classic spirit, the actual style adopted being that of the First Empire. Throughout the entire house the carpets are of heavy pile Wilton, in an attractive shade of petunia, taken from a rare antique Chinese rug. The other dominating colours of the scheme are pearl grey relieved with Italian pink and Wedgwood blue in combination with bronze gilt to all the carved and modelled enrichments. From the foyer, which has been redecorated to represent French stuc and fitted at each end with box offices of mahogany, is entered the rotunda, also carried out in stuc treatment with columns decorated to represent lapis lazuli supporting a coffered dome, the panels of which are in shaded tones of blue and grey. Passing through the rotunda is reached the grand staircases, which lead off left and right and are known, respectively, as "The King's Side" and "The Prince's Side." On the first landing of the staircase on "The Prince's Side" hangs a painting by Romney, entitled "The Death of Lucretia," and at the foot of "The King's Staircase" is another old master. The French stuc walls of the staircases are enriched with six hand-painted tapestries in the Gobelin manner, depicting scenes from Shakespeare's plays, "As you like it," "Love's Labour's Lost," "Twelfth Night," "Henry VIII," "Richard II," and "Taming of the Shrew." These are in sunk panels and framed in bronzed, reeded frames. On the first landing of the staircase is the grand saloon, now re-decorated in tones of beige and gold, the effect of which materially enhances the beauty of its proportions. The carpet here is of the same petunia colour, and the curtains materially assist the general decorative effect.

From the rotunda there is also an approach to the stalls by means of two descending staircases. These converge in corridors which lead into the stalls. The corridors, together with the stalls saloon, are also decorated in stuc effect with petunia carpets.

The boxes are a dominating feature of the auditorium. The Royal box, the front of which is embellished with the Royal arms, is on the "grand circle" level, and the importance of it is emphasised by giving it a much greater height than the surrounding boxes. On the fronts of the boxes the lapis lazuli columns rising from rouge royal marble bases stand out against the bronze gilt of the balconies. On the fronts of the boxes is the series of plaques representing the Muses, after the manner of Flaxman. These are in white on a ground of Wedgwood blue. A feature of the front of the dress circle is the series of panels in which are emblazoned the names of the great actors who have been associated with Drury-lane Theatre in the past.

The tableaux curtain and all the box draperies are of a rich Chinese yellow velvet, expressly woven for this theatre. The velvet is embroidered with a design in the Empire style in azure blue and gold.

The proscenium arch rises from bases of black marble, and is relieved by bands of sienna. In contrast with these are the mouldings of this arch, which are coloured to represent lapis lazuli. At the sides of the auditorium are some monochrome panels after Fragonard, reproducing many of his familiar designs, notably his "Fontaine d'Amour" now in the Wallace collection.

The whole of the decorative work was carried out by Messrs. Hampton & Sons, Ltd., of Pall Mall East, London, who in addition carried out the repainting and redecorating the whole of the exterior, all the rest of the redecoration, all interior painting of offices, staircases, exits, entrances, &c., and all the carpetings and hangings throughout the theatre.

The heating of the theatre is on the "Plenum" system.

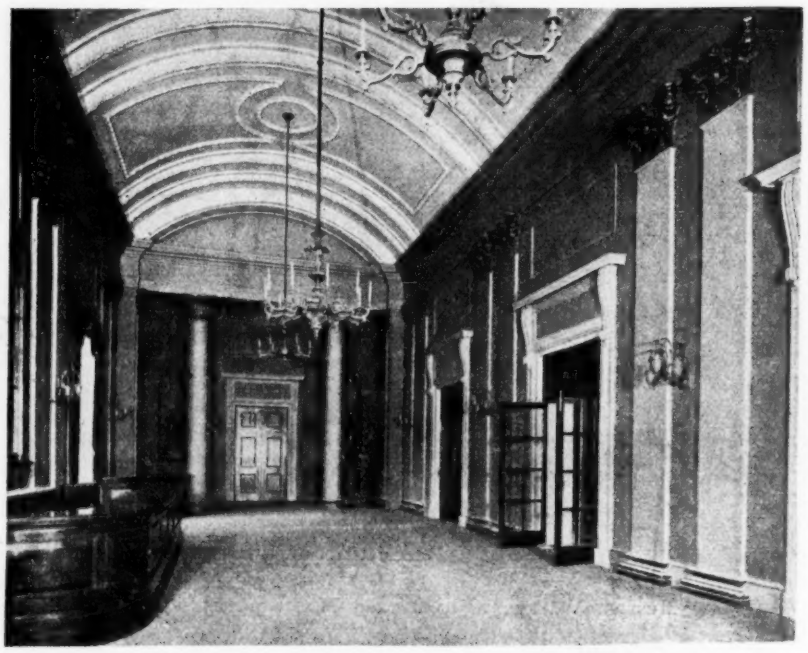
The floors to all the circles and galleries, as well as to the boxes, are constructed in reinforced concrete, the whole of which were laid on the Self-Sentering expanded metal process, which was also used for the construction of the flat roof, the latter covering about one-third of the entire area of the building. A feature of the galleries is that there are no pillars, and every seat in the house has an entirely unobstructed view of the stage.

The reconstruction of the interior of the theatre has cost approximately £150,000. The present theatre, opened on October 10, 1812, cost to build and furnish with scenery and wardrobe £151,672 7s. 3d.

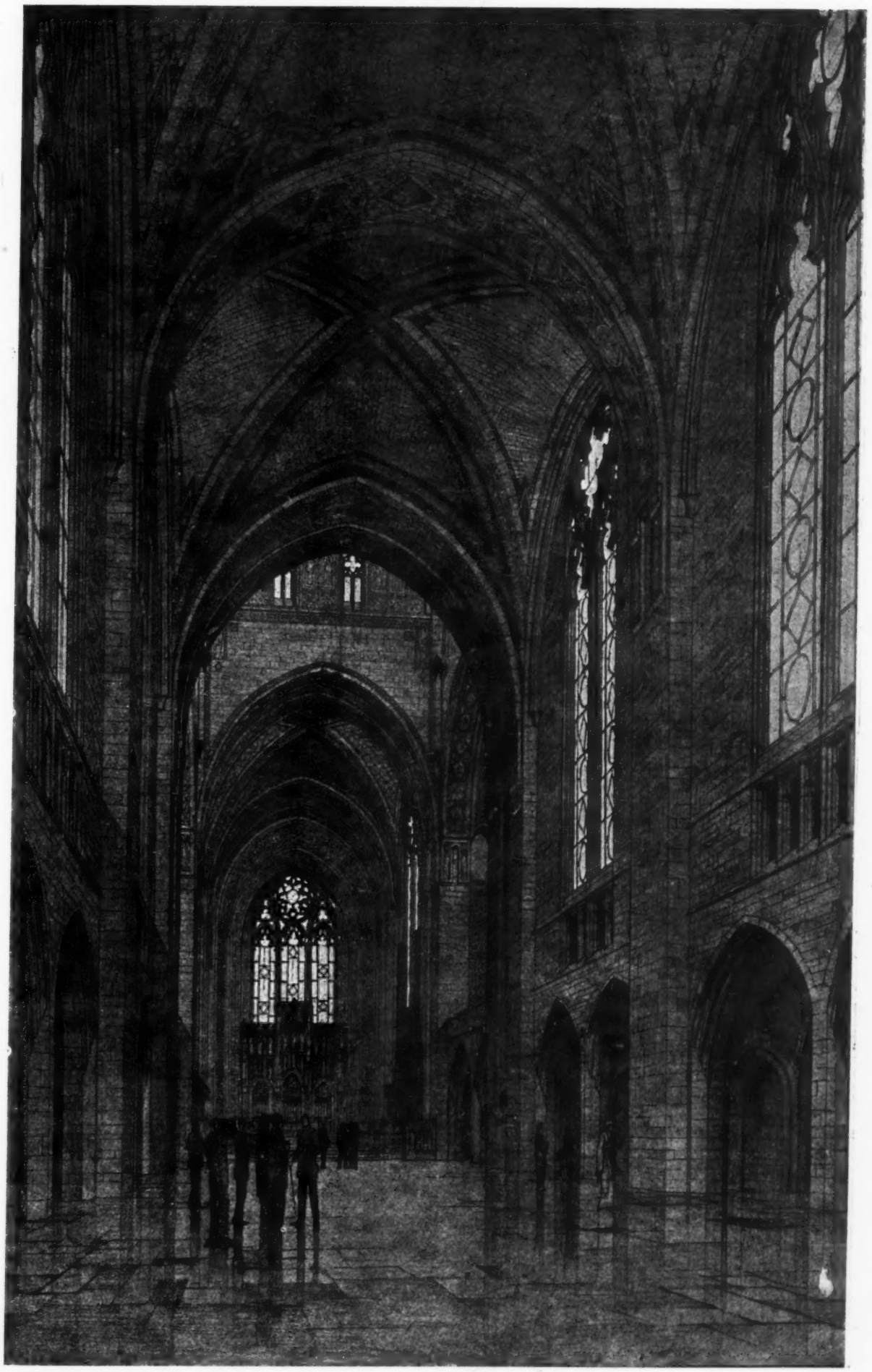
Mr. C. J. Hyde was the builder, and the sub-contractors engaged on the work were Mr. Herbert Mather (electrical installation); Moreland, Hayne & Co. (steel work); F. de Jong & Co., Ltd. (fibrous plaster); J. Jeffreys & Co., Ltd. (heating and ventilating plant); Mr. M. Stephany (seats and furniture); General Electric Co., Ltd. (electrical fittings); Merryweather & Sons, Ltd. (safety fire curtain and fire hydrants); Mather & Platt, Ltd. (automatic sprinklers); Stitson, White & Co. (sanitary fittings, drainage, etc.); Sturtevant Engineering Co., Ltd. (vacuum cleaning plant); D. Bianco & Sons (joinery); Chas. Walker & Co. (marble work); Bullivant Engineering Co. (scenery gear); Acme Flooring and Paving Co., Ltd. (stalls and pit flooring); Wainwright & Waring, Ltd. (ornamental railings); The Reliance Telephone Co., Ltd. (house telephones); Excel Asphalte Co., Ltd. (roofing); Self-Sentering Expanded Metal Works (floors and "Trussit" for walls).

Chester Cathedral Restoration.

Writing with reference to the restoration work at the Cathedral, the Dean of Chester says: "We have every hope that by the end of this month the Refectory will be available once more. . . . We propose to hold over till June 21 any formal opening of the repaired Refectory and its adjacent buildings, and to combine it with the presentation of our St. Werburgh's purses on this anniversary of the translation of her body to Chester. By this date, I hope that other work will be sufficiently advanced to show what a wonder of the world we are going to have at Chester when our scheme is complete. . . . . It aims at restoring to the use of the living Church to-day all that is left—and it is a very great deal—of the old domestic buildings of the monastery, in conjunction with what is already at its service. A new approach is being laid out through Abbey-square, with a main entrance to the Refectory facing the Abbey Gateway. A broad flight of steps will lead down to an old Norman door opening into the great Norman undercroft (120 ft. × 40 ft.), which, with more light and a good concrete floor, will form a spacious ambulatory, with, hereafter, adequate cloak-room accommodation. Turning to the left, a broad vault, divided by an oak screen, forms our kitchen and entrance to the Refectory itself. . . ."

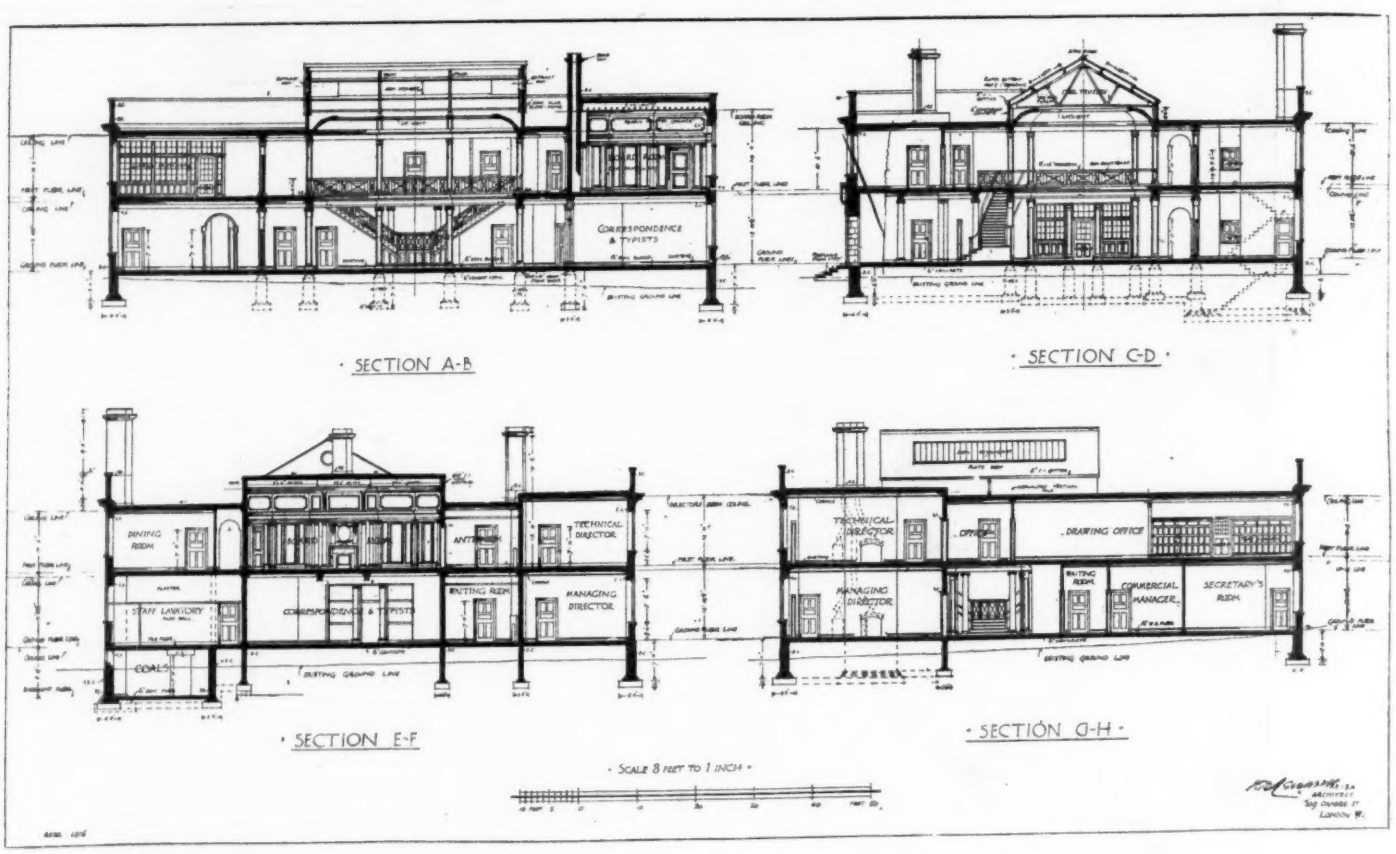


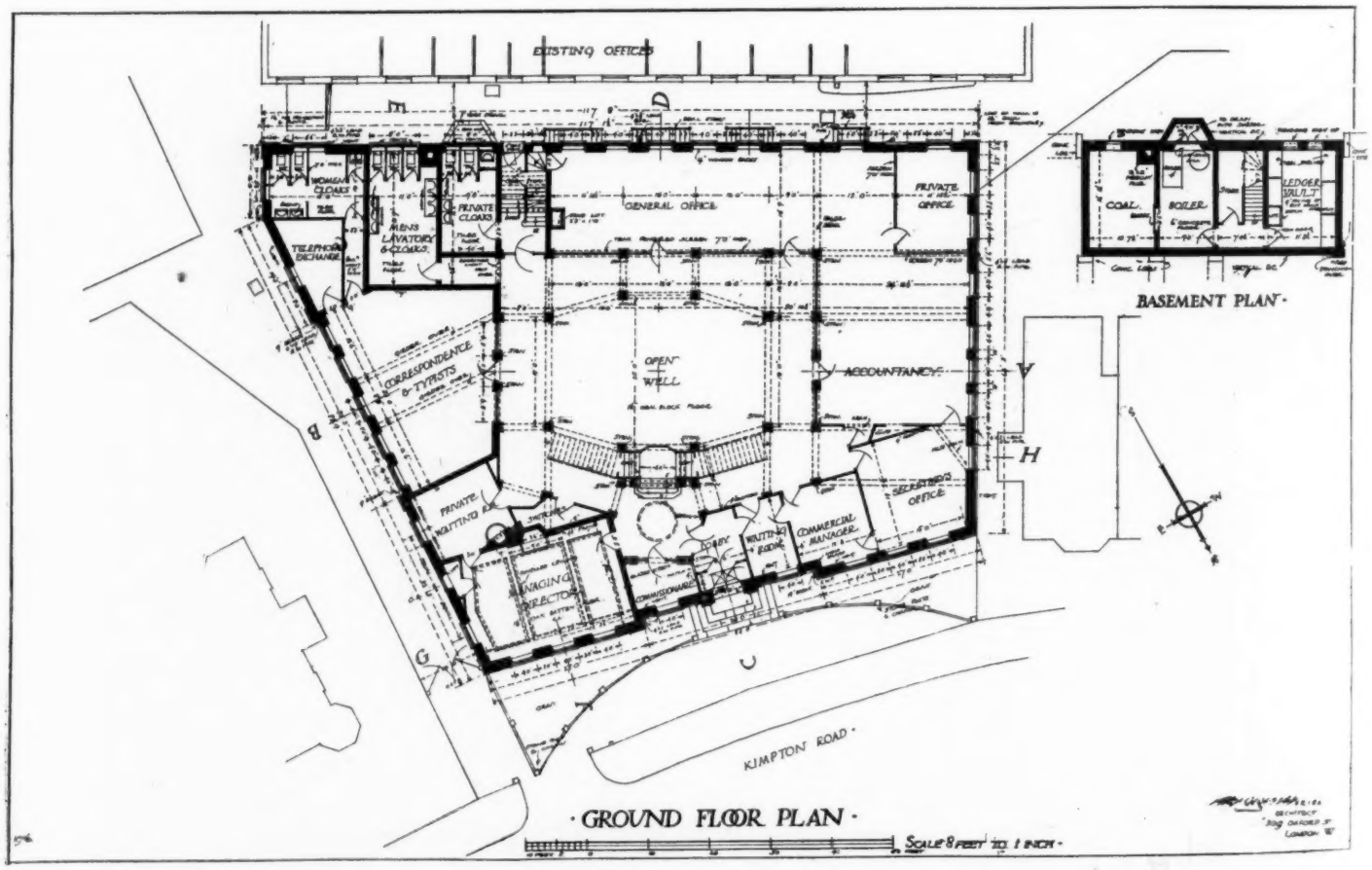
Reconstruction of Drury-lane Theatre: the Grand Saloon.
MESSRS. WALKER & JONES and MR. ROBERT CROMIE, A.R.I.B.A., Architects.



INTERIOR LOOKING TOWARDS CHANCEL.

Proposed Chapel for the University of Chicago, Illinois. Mr. Bertram G. Goodhue, Architect.



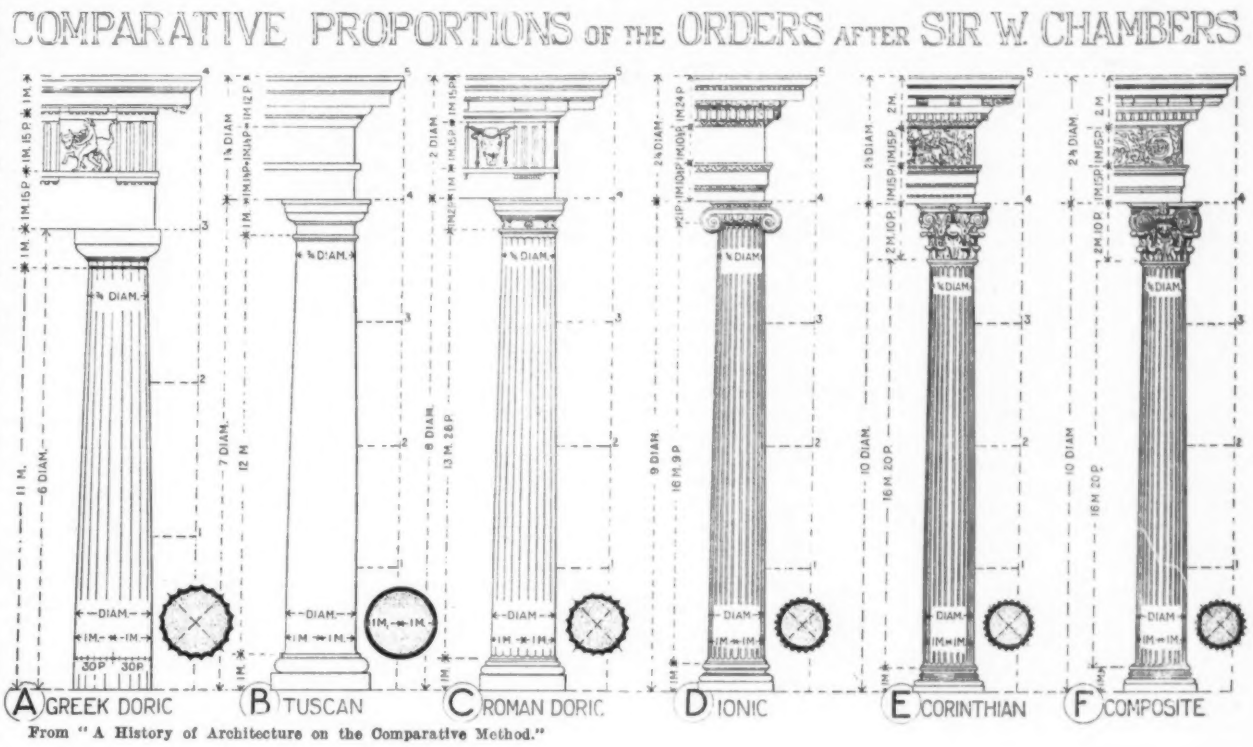


New Offices, Luton.

Messrs. H. B. Creswell & W. A. Forsyth, FF.R.I.B.A., Architects. (See p. 556.)

A HISTORY OF ARCHITECTURE ON THE COMPARATIVE METHOD.

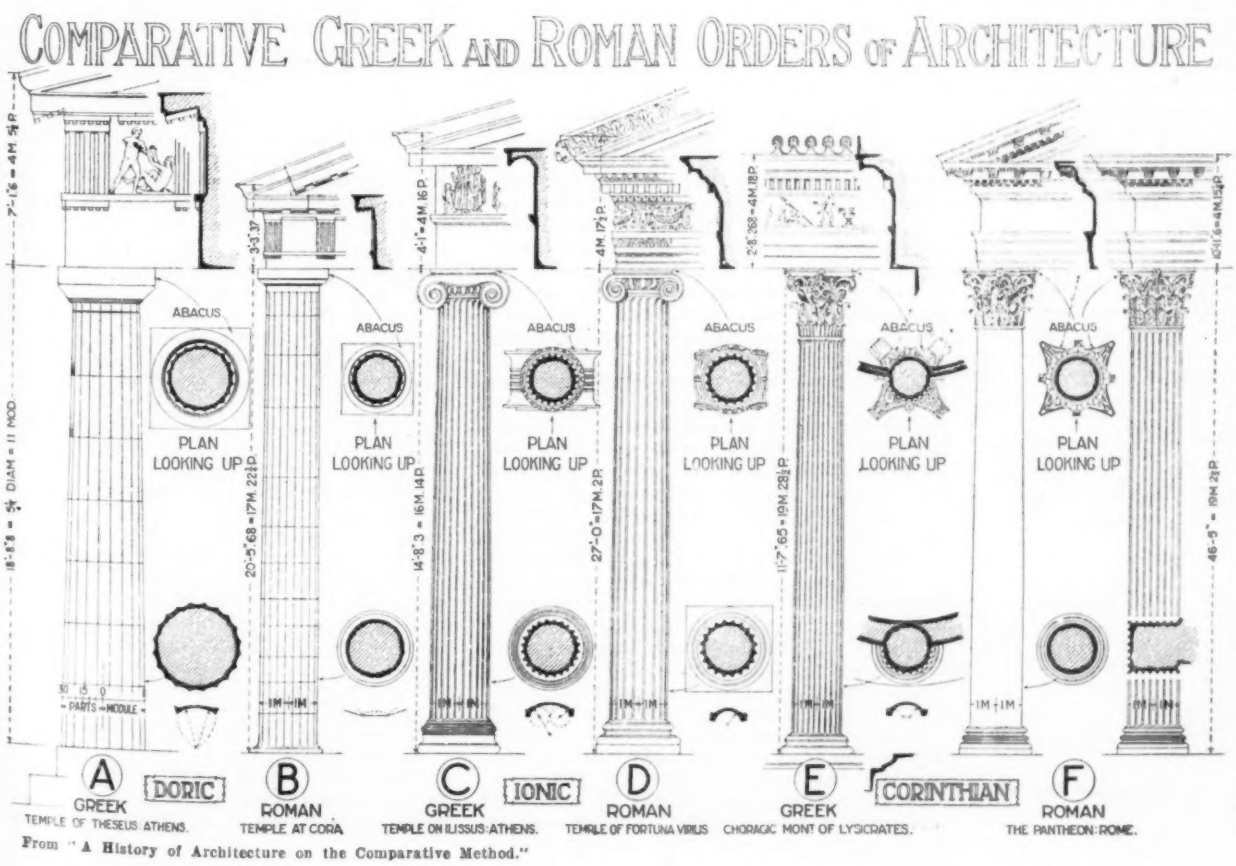
WE have received the sixth, and what we believe is an entirely new, edition of Sir Banister Fletcher's "History of Architecture on the Comparative Method," which has been published by Messrs. B. T. Batsford, Ltd.* The work was originally published in 1896, and has hitherto borne the joint names of the present author and his father, the late Professor Banister Fletcher, though the former, we understand, was chiefly responsible for the work. The present edition has been rewritten throughout and largely recast in its arrangement. Several alterations have been made in the new edition, which well carries on the traditions of its predecessors, yet is sufficiently different in style and treatment to mark an advance on the last edition. The format has been slightly enlarged to give latitude to the illustrations, but the general style of the book remains the same. To relieve the size and weight the text has been printed in a slightly smaller type, and on a rather thinner paper, yet the volume is still almost as bulky as the old edition—a comparison which indicates that much additional matter has been incorporated.



From "A History of Architecture on the Comparative Method."

The comparative system by which the matter in the book is organised is an excellent one. The value of this mode of arrangement has been proved by the number of books on various subjects based on it published during recent years. Comparative geographies, atlases, and what not have clearly shown what ready grasp of a subject is afforded by this method of contrasting salient points. It is probable that many advances have yet to be made on these lines, for in most of these works the matter offers tempting opportunities for the further development of the idea. If languages were so taught many knotty points of grammar would be made clearer by the comparison and condensation of the methods of classification adopted in the exposition of different languages. The method, at any rate, is of considerable practical value. The volume under discussion serves equally well as a quick-reference book and as a medium of elementary instruction; thus it suits the needs of both the amateur and the technical student. A very thorough index, with a careful series of cross-references, has contributed to this effect.

Perhaps the most remarkable advance on the old edition is to be seen in the illustrations. In the fifth edition—published in 1905, though several times reprinted—these were very systematically organised, as may be realised by comparison with other volumes of the kind; but now both drawings and photographic subjects have been greatly expanded and enlarged in scope; very few of the old diagrams remain, for nearly all of them have been recast and amplified, and many new ones have been added. The standard of draughtsmanship in these plates is a high one. One of the best improvements, by comparison with the old edition (very deficient in this respect), is that the lettering has been standardised throughout, and is now of an excellent block type. The maps which have been added also make the contents of the book much easier to grasp, by the geographical influences which they portray.


COMPARATIVE GREEK AND ROMAN ORDERS OF ARCHITECTURE
A GREEK DORIC TEMPLE OF THESEUS ATHENS.
B ROMAN IONIC TEMPLE AT CORA
C GREEK IONIC TEMPLE ON ILISSUS ATHENS.
D ROMAN IONIC TEMPLE OF FORTUNA VIRILIS
E GREEK CORINTHIAN CHORAGIC MONT OF LYSICRATES.
F ROMAN CORINTHIAN THE PANTHEON: ROME.
ABACUS
PLAN LOOKING UP
From "A History of Architecture on the Comparative Method."

As is pointed out in the preface, much of the matter, especially under the title "Comparative Analysis" (a much clearer heading than in the old work), has been co-ordinated; thus, in the section on "English Mediæval Architecture," each feature is taken in turn and its history followed consecutively through all periods, instead of being split up as formerly.

*"A History of Architecture on the Comparative Method, for the Student, Craftsman, and Amateur." By Sir Banister Fletcher, F.R.I.B.A., F.S.I. (London: B. T. Batsford, Ltd.) Price £2 2s. net.

HISTORICAL BUILDING CONSTRUCTION.—X.

BY MARTIN S. BRIGGS.

EXTERNAL PLUMBING.

THE typical plumber shares the honours at modern music-halls with the typical policeman and the typical mother-in-law. Any one of these three imaginary characters is always sure to provoke a laugh, not least the plumber—the man who invariably fails to mend a burst pipe, and as invariably has to return home for the tools he has forgotten to bring English humour is largely based on somebody else's discomfiture, and a burst pipe being a discomfiting thing the incident itself is full of humour. But the character of plumber himself, as the incompetent workman, must surely have some justification in fact.

Modern plumbing appears to the modern man in the street as a matter of pipes and little else. The gasfitter and the heating engineer have further curtailed the plumber's province, and nowadays his functions inside the house are restricted to water-pipes and waste-pipes only. He is known to have some minor and little-understood share in the covering of a roof, but that being limited to a few strips of lead here and there, mostly concealed when the building is complete, he is the very last among the makers of the building whom the general public regard as a craftsman. For them his work should be hidden as far as possible, and mentioned either as a joke or as something almost indecent. Yet, if one refers to the article "Plomberie," in Viollet-le-Duc's famous "Dictionnaire Raisonné," one finds there a study of the artistic leadwork of the Middle Ages.

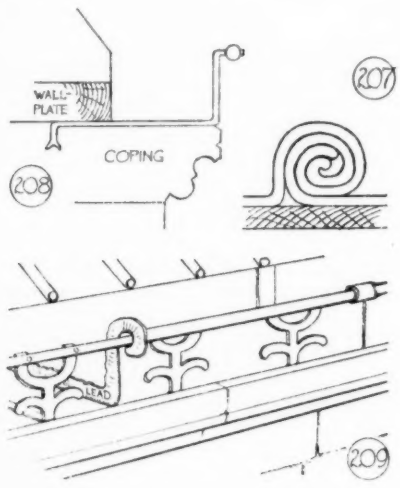
In the old days leadwork was a craft—even an art. As this article will prove, and as all capable architects know already, lead is not a mean material if properly handled. Like plaster, it is well suited to soft modelled outlines in low relief, and away from the smoky and acid-laden atmosphere of industrial towns it assumes with age a silvery colour that adds to the charm of many an old church-spire and garden.

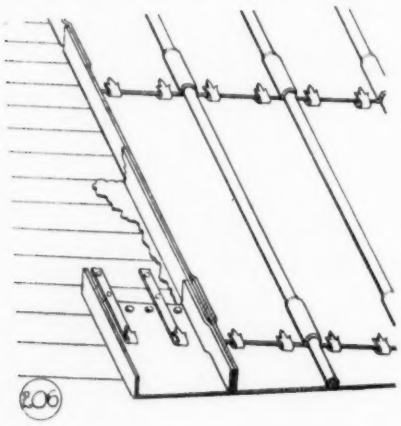
But not until the Middle Ages do we find it extensively employed on buildings of which there are remains. In ancient Egypt it was known, at any rate during the later dynasties, and small objects of lead were deposited as charms in the foundations of buildings. But Sir Gardner Wilkinson states that it was sometimes used for inlaying temple doors, coffers, and furniture. It was also known to the Assyrians, probably in connection with masonry. Professor Lethaby illustrates and describes the small lead plummets, about 3 in. by 1 in., used by the Greeks, of which several examples are preserved in the British Museum, and also notes the employment of lead in pediment sculptures and as an inlay.

The Romans used the metal freely—for covering roofs, for lining cisterns and baths, for water-pipes, and (as already noted in Article III) in connection with masonry. Sheet-lead was employed for roofs and gutters. The Roman bath at Bath was lined with sheets of lead 10 ft. long weighing 30 lbs. per sq. ft. At Bath there is also a water-channel 1 ft. 9 in. by 7 in. of lead nearly 1 in. in thickness, according to Professor Lethaby. Pipes "were formed of strips of cast lead bent round a rod and then soldered," according to the same writer, who states elsewhere that specimens of these pipes from Londinium are preserved in the Guildhall Museum. Vitruvius (VIII, vi, 4–11) says that in Rome of his day lead water mains were cast in 10-ft. lengths, and that they were measured by weight, the latter being calculated according to the width of a 10-ft. strip before it was rolled up to form a pipe. But he adds that "water from earthenware pipes is much more wholesome than that which is conducted through lead pipes, because lead is found to be harmful for the reason that white lead is derived from it, and this is said to be hurtful to the human system."

Much lead was obtained from the north of England and from Wales, not only in Roman days but long before, when the Phœnicians voyaged to our shores in search of tin. In remote places in the Yorkshire dales may still be seen disused lead workings, now rendered unprofitable by improvements in modern transport.

Lead was largely used in Byzantine architecture for covering domes and for other purposes.

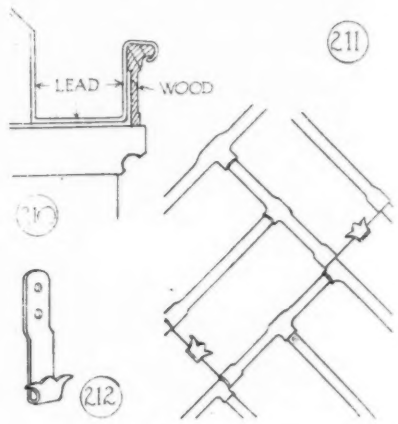




Constantine's basilica of the Holy Sepulchre at Jerusalem was covered with sheet lead.

Examples of Romanesque leadwork of certain date are not very numerous, but confirm the definite testimony of records as to the extensive use of the metal for architectural purposes. In England are preserved some 30 lead fonts of various dates, among which twelve at least are Norman. In these fonts Romanesque leadwork displays a high level of design and craftsmanship; they are unimportant, however, from the point of view of construction. But many church roofs were of lead in Saxon times, and also lead was largely exported to the Continent. York Minster is said to have been roofed in lead about 669. Bede relates that at the church at Lindisfarne in 638 the Bishop "took off the thatch and covered it, both walls and roof, with lead." In France at the same period lead was largely used externally. Viollet-le-Duc, in his article *Plomberie*, writes: "Under the Merovingian kings, entire edifices—churches or palaces—were covered with lead." The choir of Canterbury (1093-1130) was roofed with lead, as were the choir-aisles in 1184.

From the thirteenth century to near the end of the sixteenth leadwork was largely employed for the roofing of churches, but the ornamental pipes, pipe-heads, and cisterns so characteristic of the Tudor and Stuart periods were little used, if at all. The Gothic epoch in France produced a great deal of ornamental leadwork in cresting, crockets, and finials, but, from the time when English craftsmen designed the Norman fonts already mentioned to the date of the ornamental pipe-heads at Haddon Hall, described below, English leadwork was almost entirely confined to plain sheets laid on roofs and to utilitarian gutters; that is, to "plumbing" even in our limited use of the word. Something has already been said of gargoyles and gutters in Article VIII, and, as a rule, lead was carried along the top of gargoyles, dressed down into a channel thereon, and carried over the end. But in 1241 Henry III wrote to the Keeper of the Works at the Tower of London: "We command you to . . . cause all the leaden gutters of the great tower through which rain water should fall from the summit of the same tower to be carried down to the ground, so that the wall of the said tower, which has been newly whitewashed, may be in no wise injured by the dropping of rainwater nor be easily weakened."



At Kettering Church is a rare example of a lead down-pipe, illustrated by Bond, who mentions others at King's College Chapel, Cambridge, but gives it as his opinion that the mediæval builders avoided the use of down-pipes because they are liable to become choked, and preferred the primitive arrangement of gargoyles where all the drainage was open and visible.

Professor Lethaby is of opinion that lead was used in roofing simply for æsthetic reasons, pointing out that "the creeping of lead on steep surfaces, the many burnings, and the great expense in large churches which would take literally acres of lead, made maintenance a burden." . . . From a seventeenth-century document it appears that a certain carpenter had to do plumber's work in his own district, implying that the craft of the plumber was not then entirely recognised, but in the fourteenth century the Plumbers' Company was established in London.

The lead used in the Middle Ages was cast, not "milled" like modern lead. The former is generally very thick, weighing as much as 12 or 13 lbs. per sq. ft. The casting was done on a bed of smooth sand specially prepared for each sheet. The process has been well described by Mr. F. W. Troup, who reproduces an old print showing the apparatus required. The casting-frame resembled a long table in appearance, with a 4 in. rail all round. On this table was laid sand about 2½ in. thick, which had to be kept damp. When, in the sixteenth century, ornamental features were used on leadwork models of them were pressed into the sand bed, just as was done for the Sussex iron firebacks (see Article VII). Molten lead was then poured over the bed, and superfluous metal removed with a "strike." This casting was usually done on the site. Such a method produced a pure and natural sheet of lead, but, in order to avoid flaws caused by steam rising from the damp sand below, it had to be made unnecessarily thick and therefore very heavy. The comparative merits of cast and milled lead have long been wrangled over by architects, but the prejudice that still lingers against milled lead

is gradually giving way to a common-sense view of modern needs.

Viollet-le-Duc points out that mediæval lead is seldom eaten away by the acids from the sap in the boarding beneath, as the latter was always thoroughly seasoned. He also remarks on the intimate connection between carpentry and leadwork. Old lead contained much silver and

arsenic, hence the beautiful white *patina* that appears on it with age.

The object to be attained in laying lead is so to secure it that it is free to expand and contract, yet firm enough to throw no undue weight on the supporting rafters and boarding, thus avoiding sagging of the timbers and the resultant water-holding depressions in the lead sheet. Figs. 206 and 207 (adapted from Viollet-le-Duc) show how this was done at Chartres Cathedral in the thirteenth century. The lead was about $\frac{1}{8}$ in. thick, in sheets not more than 2 ft. wide and 8 ft. 4 in. long. These were nailed at the top, with iron nails having very large heads, to oak boarding. The side of each sheet was so rolled up with the edge of the sheet adjoining as to form rolls of rather more than $1\frac{1}{2}$ in. diameter. (Fig. 207). The bottom edge was secured by two iron clips to prevent the wind from blowing it up. The tails of the clips were nailed to the boarding. All this work was sound when examined in 1835. At Canterbury the sheets were of 12 lbs. lead and 2 ft. wide. Another requirement in plumbing for roofs is that every piece of lead can be as easily removed and replaced as is a tile or slate. In Gothic work this was contrived not only for plain sheets and for gutters, but also for the elaborate lead ornaments that were used so largely in France and that Violet-le-Duc has described. The mediæval craftsman showed himself thoroughly practical in all plumbing details; thus, he provided small outlets in the leadwork to ventilate the roof timbers, and where he had to put a nail on an exposed surface he was careful to protect it from the weather by means of a small lead flap.

In the article on "Roof Covering" (No. VIII), the development of the parapet gutter was briefly described. Figs. 208-9 illustrate a type of eaves gutter often found in France. Here the lead strips forming the gutter, each about 4 ft. in length, are dressed over an iron rod, supported on iron brackets carried under the gutter and caulked into the coping-stone under the wall-plate. The gutter is lapped with a drip at each joint and a gargoyle at about every other joint. Fig. 210 shows how a wooden fascia was used to form a miniature parapet-gutter on dwelling-houses in France, the lead being brought over the top to protect the top edge of the woodwork. In some cases in England the sheets of lead were simply carried over the ends of the rafters at the eaves, and the water allowed to drip from them. The choir of Canterbury has an enriched lead parapet, and at Lincoln is another lead-covered wooden [parapet which looks very much like stone.

England possesses many lead spires of various forms, but from a purely constructional point of view their importance to us as regards leadwork lies chiefly in the method by which the lead was secured. The surface being nearly vertical, the metal sheets are apt, by their own weight, to tear at the nail-holes. They should therefore be laid with diagonal rolls, as shown in Figs. 211–2. Many examples have vertical rolls, but Figs. 213 and 214 show alternative diagonal treatments from Godalming and Chesterfield respectively. The famous twisted spire at Chesterfield has been held up as an example of "architectural refinement," but, so far from being intentional, this twist appears to be only an exaggerated instance of timbers warped by time and by the strain of the alternately expanding and contracting leadwork. Most of the great lead spires of the past have perished, among them that of Old St. Paul's, the loftiest of all, rising more than 260 ft. above the great tower below. At Amiens is a wonderful lead *flèche*, and in England a few leaded "spirelets."

Towards the end of the sixteenth century the use of lead down-pipes and ornamental pipe-heads was introduced into England and soon became a characteristic of our architecture. For a century and more English plumbers occupied the pre-eminent position hitherto held by French craftsmen. The exact date of the first ornamental pipe-head has caused much controversy, but space does not allow of it being discussed here. From *c.* 1580 to *c.* 1650 the forms were essentially English, hardly influenced at all by the foreign artists imported during the Renaissance. The Gothic gargoyle or spout was reduced in length to form a box, from which the water descended in a square pipe. This box was sometimes long in shape (Fig. 215) and sometimes tall and narrow (Fig. 216), thus forming "either glorified gutters or glorified funnels." The early heads were supported by nails passing through the ears, and by iron staples passing under the "box." The latter was cast in sheet lead, the cornice being beaten into shape over a pattern, and the top edge sometimes cut into ornamental crenellations. Traceried discs, cast separately, were often applied to the heads or the ears, the nails passing through them in the latter case (Fig. 217). Pierced "lacework" is freely used in the decoration of the Knole heads (Fig. 215). At St. John's College, Oxford, are some remarkable pipe-heads, decorated in heraldic colours and gilding, and recently restored.

Figs. 216 and 218 illustrate ornamental gutters from Winchester and from a cottage at Bramhall, Cheshire, respectively. Fig. 219 shows a pipe from the same cottage, justifiably regarded by Sir Lawrence Weaver as "the most beautiful pipe in England." It is 4 ft. 4 in. long, and $4\frac{1}{2}$ in. by $2\frac{1}{4}$ in. externally: "The ornamental front is a casting soldered to an unornamented channel section to form the pipe." Pipes of this period are always rectangular, and wider than their projection. One example at least has a curved front. Water from the rain-water gutters and pipes was often collected in an ornamental lead cistern, but few now remain.

The lead covering of roofs during the period 1580–1650 presents no features of interest, and Sir Lawrence Weaver has exploded the idea that Nonesuch Palace was covered with sheets of lead, as Pepys stated. But lead was used for lanterns and angle turrets, though the bulbous lead spire that was so familiar a feature in Baroque buildings of Central Europe never became popular in this country.

During the later Renaissance in England (*c.* 1650–1750), leadwork underwent the same change that we have already witnessed in the other crafts. The plumber ceased to design in his own way. He carried out the instructions of the architect, who in his turn sought "inspiration" from measured drawings of Palladian buildings in Italy. So we find pipe-heads, like plaster ceilings, taking unto themselves classical mouldings and classical forms from the copy-books. The craft, however, died slowly, and Fig. 220 shows a typical example (from Petworth) of its later state. Heads of this period are made from lead varying from 7 to 12 lbs. per sq. ft., and averaging about 10 lbs.

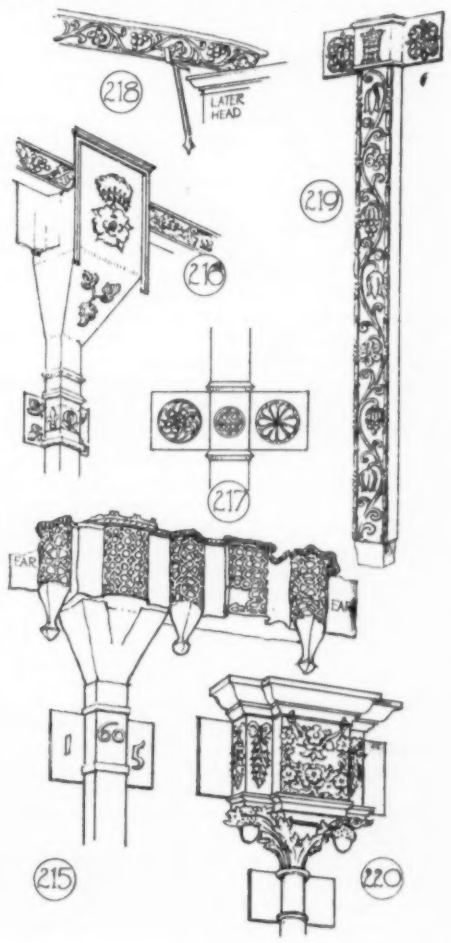
Ornamental gutters were occasionally used, and the form of pipes varied little, though circular pipes are now found in angles of a building. Pipes were sometimes worked with a spigot and socket joint, the bore thus being reduced at every joint, with a corresponding loss of efficiency.

The use of large ornamental lead rain-water cisterns at that time became common. Their form was almost always oblong, but often they tapered slightly upwards, this making cleaning the more difficult. (For drinking-water, of course, their use was never wise.) Externally they were decorated with ribs forming panelling, with applied cast ornaments, or with elaborate bas-reliefs. They were strongly constructed of heavy cast sheet-lead, with lead stays and bars.

Wren used lead very largely, on the dome of St. Paul's and in the picturesque steeples of his City churches, but did not favour the diagonal rolls of his "Gothick" predecessors. Most of these steeples have turned black with City smoke and acids, so that they have none of the silvery *patina* of country churches, but supply a contrast with the white Portland stone towers beneath them. It is remarkable that the lead on many of these spires, as on other old buildings, is not nailed to close boarding—such as we should use—but to battens, spaced several inches apart, and, in one case at least, fixed diagonally. Lead-headed nails are used in some cases, clips in others.

But the chief event in plumbing of this period was the invention of milled lead in the last quarter of the seventeenth century. Wren seems to have employed it with disastrous results at Greenwich Hospital in 1700, and it was a long time before improved methods of manufacture made it generally acceptable. After 1750 the interest of leadwork as a craft declined, it became mechanical, and only in staircase balustrades and other minor ornamental details do we find lead used with any sense of its decorative possibilities.

[The sketches illustrating this article are all specially drawn, but Nos. 206–214 are based on Viollet-le-Duc, Fig. 218 on a sketch in Lethaby's "Leadwork," and the remainder on photographs in Weaver's "English Leadwork."]



ARCHITECTURAL SOCIETIES.

READING SOCIETY OF ARCHITECTS.

Annual Meeting.

THE second annual meeting of the Reading Society of Architects, which is the Berkshire Branch of the Berks, Bucks, and Oxon Architectural Association, was held at University College, Reading, on March 29, when there was a good attendance of members and friends, including the Mayor and Mayoress of Reading (Mr. and Mrs. W. Rowland Howell, F.R.I.B.A.), Mr. Chas. Steward Smith, F.R.I.B.A. (Chairman of the Executive Committee), Mr. Allan W. Seaby, Mr. W. Galt Millar, F.S.I., Miss A. M. Bradley, Mr. and Mrs. W. H. Pountney, Mr. J. T. Saunders, F.R.I.B.A., Miss Wilson, and Messrs. C. B. Willcocks, F.R.I.B.A., H. Hutt, A.R.I.B.A., J. R. Greenaway, F.S.I., Herbert Maryon, F. A. Woods, A.R.I.B.A., H. T. Morley, F. Sainsbury, M.S.A., W. J. Freeman, A.R.I.B.A., H. W. Rogerson, M.S.A., W. W. Roberts, H. S. Smith, A. T. Doe, W. Allen, R. J. Carter, A. H. Powell, D. Skurray, W. K. Laurie, F. G. Goodin, P. G. Carter, S. E. Burrett (Secretary).

Chairman's Report.

The chair was occupied by Mr. Chas. Steward Smith, who, in a brief report on the recent work of the Society, mentioned that the membership of the Society now consisted of 84 Members and 10 Honorary Members.

During the previous year a Design Competition was arranged for Student Members, the subject being a design for a pair of suburban villas. Nine sets of drawings were received and the assessor (Mr. W. Ravenscroft, F.R.I.B.A.) awarded the first and second premiums to the designs submitted by Mr. R. J. Carter and Mr. A. H. Powell. The design submitted by Mr. G. Batten was highly commended.

On November 2, 1921, the Society paid a visit to Messrs. Samuel Elliott & Son's Caversham Joinery Works. The party consisted of about 30 members, who spent a very interesting two and a half hours inspecting the different shops.

Members of the Society have on several occasions taken part in visits and attended lectures arranged by the Berks Archæological Society, with which society the Reading Society of Architects is affiliated. In connection with this branch of the Society's activities, arrangements have been made to keep a record of measured drawings and illustrations of historical and interesting old buildings in Berkshire and surrounding districts. It is proposed to prepare a list of buildings of which measured drawings are required, and the Society will offer special prizes for measured drawings of these buildings. In conjunction with this scheme the local authorities have arranged for photographs to be taken of interesting buildings in Reading which are threatened with destruction.

A class in architectural design has been started at Reading College, which commenced with an attendance of 13 students.

Election of Officers.

After the Chairman's report, the Executive Committee for 1922 was elected as follows:—

Chairman, Mr. W. Roland Howell, F.R.I.B.A.; Vice-Chairman, Mr. Chas. Steward Smith, F.R.I.B.A.; Hon. Librarian, Mr. H. Whiteman Rising, F.R.I.B.A.; Hon. Treasurer, Mr. J. H. Goodman; Hon. Secretary, Mr. C. B. Willcocks, F.R.I.B.A.; Members, Messrs. W. Galt Millar, F.S.I., W. R. Morris, T. T. Cumming, A.R.I.B.A., and W. J. Freeman, A.R.I.B.A.

The new Chairman, after thanking the members for his election, shortly reviewed the work of the Society since its formation, and congratulated the Society on its rapid growth. He also drew attention to an architectural exhibition proposed to be held in the Art Gallery during the first fortnight in July, when the Royal Institute of British Architects Prize Drawings will be on exhibition, together with a selection of the Prix-de-Rome drawings and photos and drawings of the works of members of the Berks, Bucks, and Oxon Architectural Association. In connection with the exhibition several public lectures on architecture will be arranged.

The following were elected to represent the Reading Society of Architects on the Council of the Berks, Bucks, and Oxon Architectural Association:—Messrs. W. Roland Howell, F.R.I.B.A., F. H. Floyd, F.R.I.B.A. (Newbury), C. B. Willcocks, F.R.I.B.A., F. Woods, A.R.I.B.A. (Maidenhead), and F. Sainsbury, M.S.A. Mr. Chas. Steward Smith, F.R.I.B.A., was nominated for election as Vice-President of the Berks, Bucks, and Oxon Architectural Association.

Art in Industry.

Mr. A. W. Seaby, Member of the Society of Graphic Art, then gave an address on "Design in Industrial Art." He pointed out that design in industrial art depended on public taste, and said that while bad taste was deplorable in all the arts, nowhere was it more disastrous than in the building, furnishing, and equipment of the home, where, however, evidence of bad taste must not generally be put down to the fault of the architect, as the architect's careful planning might be, and often was, nullified by the bad taste of the tenant. He referred to the beautiful mediæval pottery in the Reading Museum, composed largely of household utensils, and by means of pictures of interiors showed that good taste in former times was common to both rich and poor. He pointed out that machinery could produce good work, and gave as examples the rifle, motor-car, bicycle and battleship, all well designed, well made, and therefore beautiful.

Following a discussion on Mr. Seaby's paper, in which Mr. W. Roland Howell, Mr. W. Galt Millar, Mr. Maryon, Mr. Pountney, and Mr. Hutt took part, those present were entertained to tea by Mr. Seaby.

After tea Mr. Chas. Steward Smith and Mr. Hutt, the architects for the new Library at University College, now in course of erection, showed members of the Society and their friends round the new building, which is designed on spacious lines and when completed will be architecturally a very valuable addition to the College.

SOUTH WALES INSTITUTE OF ARCHITECTS.

The New President.

IN view of the R.I.B.A. Conference at Cardiff in June, it will be of interest to publish the following notes, sent to us by a well-known Cardiff architect, on the career of the new President of the South Wales Institute of Architects, Mr. Percy Thomas, O.B.E., F.R.I.B.A., of Cardiff (partner in the firm of Messrs. Ivor Jones and Percy Thomas, Cardiff), who was elected on March 30.

Although Mr. Thomas is a young man—he is only 38—he has already had an interesting and distinguished career. During the period of his pupilage with Mr. E. H. Bruton, F.R.I.B.A., of Cardiff, he won the first prize for architecture in the National Eisteddfodd. On the completion of his articles, Mr. Thomas spent several years in well-known Lancashire offices, and, while in Manchester, prepared the design for the Cardiff Technical College which he submitted in conjunction with Mr. Ivor Jones, of Cardiff, in the competition for that building. The design was placed first by the assessor, and Messrs. Ivor Jones and Percy Thomas were appointed architects for the building. Among Mr. Percy Thomas's successes in open competition may be mentioned the first places obtained in the Cardiff Technical College, Merthyr Y.M.C.A., and second places in Pontypridd Y.M.C.A. and Cardiff Fire Station. In the important open competition for the New Board of Trade Offices, Messrs. Percy Thomas, E. Prestwich and I. Jones, were successful in being among the ten architects elected for the final competition, an honour shared with only one other provincial firm.

In conjunction with his partner, Mr. Thomas has carried out many well-known local buildings, amongst which may be mentioned the Technical College, Cathays Park; Louis Café and Hallinan's Restaurant, Duke-street; alterations to Dowlais Chambers; Park Buildings; Guest, Keen and Nettlefold's office, Docks, Cardiff; alterations to Brain's Brewery, Cardiff; numerous hotels in Cardiff and district; "The Quarry," Fairwater; several private houses in Penarth; and the new building of the Sir Edward Nicholl Homes now approaching completion at Penylan.

Mr. Thomas is a brilliant draughtsman, and his pen-and ink sketches have been exhibited at the Royal Academy, while his well-known ability as a designer is in some measure due to special studies he has made of Greek architecture. The new President has always been a friend of the young student, and, for some time, did much valuable work in connection with the Design Club of the South Wales Institute. When the new Department of Architecture and Civic Design was started at the Technical College, Cardiff, he was made a member of the Advisory Committee, on which his counsels are highly valued. The educational activities of the Cardiff Branch of the South Wales Institute were then merged into those of the new School of Architecture, and the kindly advice and assistance given by Mr. Thomas are highly appreciated by the students and the staff of the School.

Mr. Thomas joined the Artists Rifles in 1915 as a private, obtained a commission in the Royal Engineers and went to France in 1916 with a Field Company of the Royal Engineers. He saw service on the Somme, Vimy Ridge, etc., and was appointed staff officer to the Chief Engineer of the XIII Corps. He was twice mentioned in despatches, and was awarded the Military O.B.E.

OBITUARY.

THE LATE MR. GEORGE E. HALLIDAY

Mr. George Eley Halliday, F.S.A., F.R.I.B.A., the well-known Cardiff architect, died at Cardiff on Wednesday last, at the age of sixty-four years.

Mr. Halliday, writes a correspondent, was an authority on archæology, and his works on church plate and other treatises have been in great demand. He was also an authority on ancient works and remains throughout South Wales, particularly those at Caerwent and Llantwit Major. He came to Cardiff after serving his pupilage in London, and was for some time an assistant to Mr. John Pritchard, the architect for the restoration of Llandaff Cathedral. At an early age he commenced practice as an architect and surveyor, and, as an architect, was most successful, carrying out his works with rare skill and devotion.

Mr. Halliday was President of the South Wales Institute of Architects during 1911–1913. Amongst the numerous works executed by him may be mentioned St. Teilo's Church, Cardiff; All Saints' Church, Porthcawl; Christ Church, Radyr; Caerphilly Church Tower; St. Mary's Church, Barry Dock; Llantwit Major Church restoration; Howells' Schools, Llandaff; the Llewellyn Almshouses, Neath; alterations to the "Dorothy" and Dutch Cafés, Cardiff; Messrs. Cory Brothers' offices, Docks; "The Retreat," Llandaff; and many other churches and residences, including numerous restoration work to churches, both internally and externally, throughout South Wales.

The practice will be continued for the present by Mr. Chris. J. Ward, F.S.I., Lic.R.I.B.A., at Cefn Mably Chambers, 9, Quay-street, Cardiff, who has been carrying on Mr. Halliday's practice during his illness.

The death occurred on April 6, at "Cranley," Twickenham-road, Teddington, of Mr. George E. T. Laurence, A.R.I.B.A., aged sixty-two.

THE BIRMINGHAM CIVIC SOCIETY.

THE THEATRE AND CIVIC LIFE.

The Birmingham Civic Society was recently addressed by Mr. Barry Jackson, proprietor of the Birmingham Repertory Theatre, on the subject of the relation of the theatre to civic life.

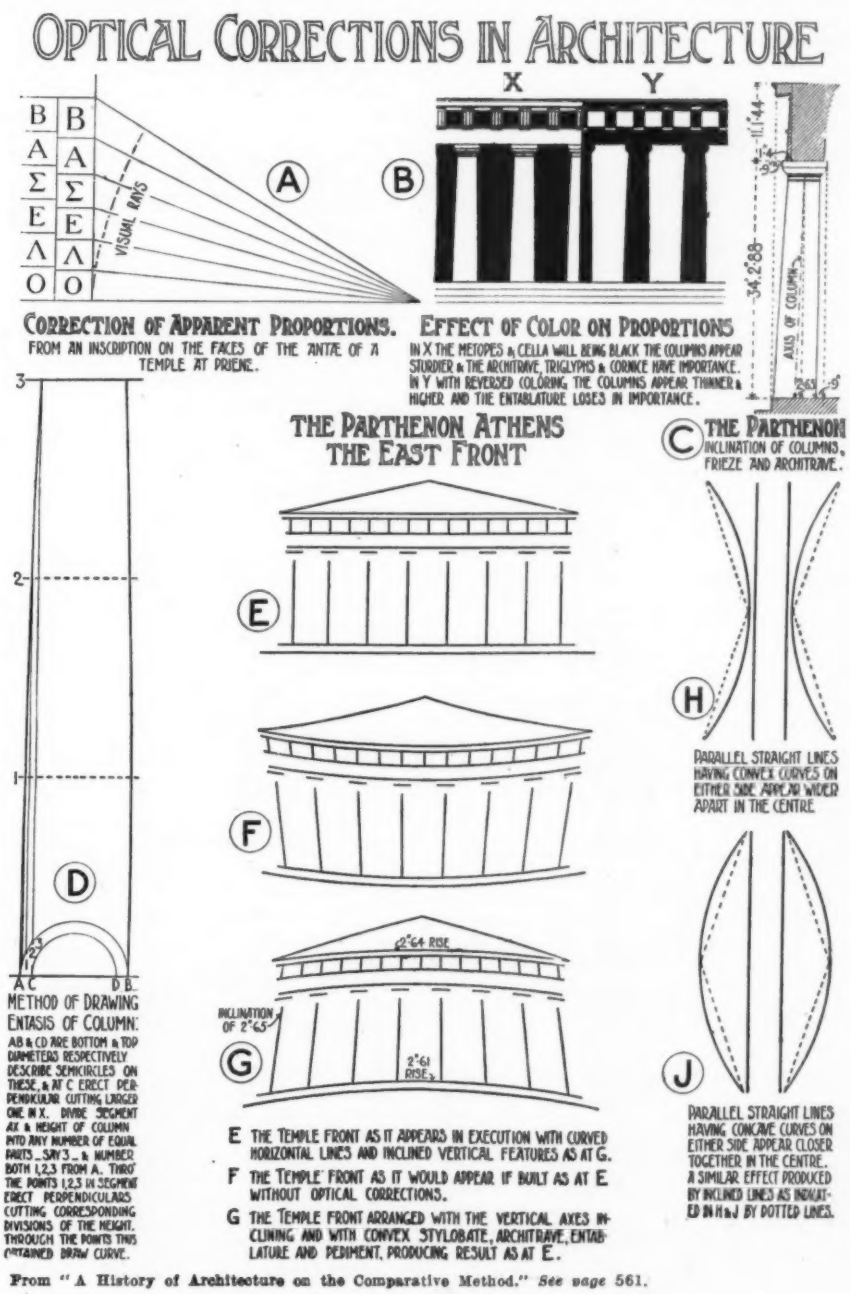
The earliest concrete form of drama known to us was, he said, found in the Greek civilisation. In that country it was entirely religious, and consequently presented before the masses with due solemnity and every dignity. The plays were performed upon sacred ground and in their action vividly showed the spectators, numbered by thousands, what ideals man should strive to attain. A standard for the plays was set up by the State, which appointed judges in order that only truly great works should be given. Roughly, the system under which the drama rose to such amazing heights was this:—A prize was offered by the State to any community for the finest dramatic work. A leader of this community commissioned and paid from his own pocket both poet and players. The judges having made selection, the reward was the public performance in Athens at one of the great religious festivals, and crowns of ivy for all concerned. In addition, the leader of the winning community was allowed to erect a monument in the vicinity of the theatre at his own expense. Thus the State drew the very best from the individual with the minimum of expense to itself. It must always be remembered that the corner-stone of Greek drama was its religious character—a character which ensured the greatest seriousness and earnestness of mind from the masses. The motive underlying the whole was the deepest known to mankind, and in direct consequence received the most noble expression and honour.

The Roman theatre was founded in imitation of the Greek, but without its religious motive. Performances were arranged by an individual who chose this method of entertaining upon a huge scale, or given by some troupe of actors to make a living. The drama was not recognised by the State, and the calling of the actor deprived him of many privileges accorded to other citizens. These little bands of actors naturally played pieces which attracted the greatest audience; consequently the standard fell and fell until at last the drama collapsed in a chaos of obscenities which to-day were unrealisable. Then followed the dark ages of all literature and learning. When the drama re-appeared it was at a nunnery in Germany. Religion again was the motive. The space of time between these religious plays and the tremendous outbursts of the Elizabethan drama was amazingly brief. Up to the period of Elizabeth, neither the State nor Sovereign gave much encouragement to the stage. Elizabeth gave her patronage to the players, and some of the nobles of her time had companies of their own. If by some chance order and system had prevailed in the theatre at that time its position to-day might have been very different, but in the wild riot of vigour let loose by the flood of the renaissance all sense of dignity was lost. In 1642 Parliament issued an order forbidding stage plays on account of the troubled state of the country, and that was the death-blow of the theatres and dramatic art of the Shakespearean period.

At the Restoration of the monarchy the theatres came into being once more, and as a result of the bigotry with which they had been persecuted, the plays, though in many cases of extraordinary literary merit, were too gross and indelicate for modern ears.

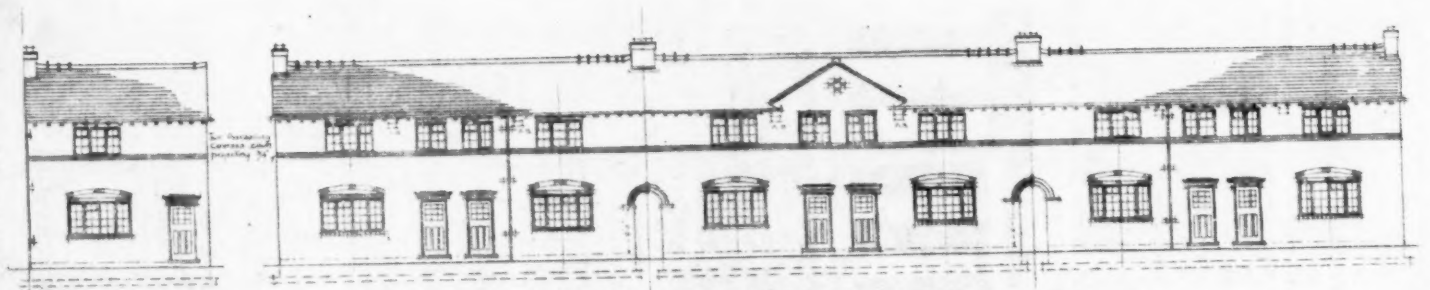
Broadly speaking, it was found that the drama received its earliest and greatest impetus from religious motives; that later it was patronised by the leaders of thought and social culture, and that at the present day its position varied according to the standard set by the people themselves and by their leaders. It was essential to realise that the theatre was a vital need of the masses. In England to-day there was no one to guide, no one to help. The policy was *laissez faire* and the devil take the hindmost. The theatre was exploited for accumulation of wealth. The commercial mind was not slow to realise the hold which the theatre possessed upon the people, and plays and players were absorbed in the grasp of individuals who had as little knowledge of the æsthetic nature of the art they professed to serve as those of whom they asked advice—the public. The whole thing became a vicious circle, with the box-office as pivot. On the other hand, there was a minority which was constantly trying to raise a voice in the wilderness. During the past ten or fifteen years endeavours had been formulated to raise the general tone of the theatre. That little minority was very scattered; it existed in some of the most remote country villages just as it did among some of the densely-populated areas—men and women calling for some means of expression through the great drama. They were so few and so far apart that the struggle seemed hopeless; the only examples before them were the wrong examples.

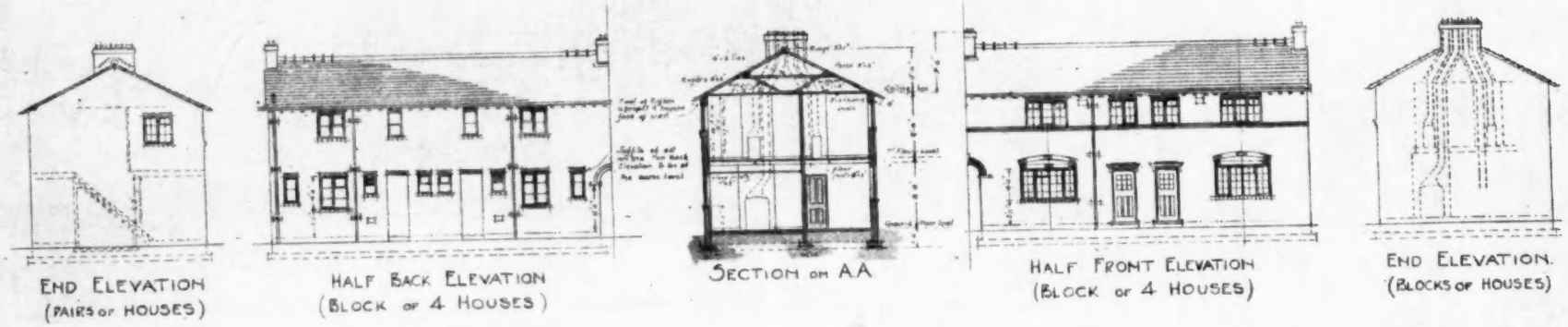
No hard and fast lines could be set down for any betterment of the theatre. It would seem that the cities of these islands were tending to become more and more self-expressive. The provincial cities must learn to take a civic pride in their artists, not to drive them away by apathy, by inattention, by the contumely born of acquaintance and the false theory that nothing good could possibly emanate from one's neighbour. On those lines it seemed that the Civic Society could accomplish much. The endeavour to make the city beautiful need not be confined to outward memorials, material forms and shapes, admirable as such work was. They must attempt to strike deep down to what was, after all, the fundamental base—the mentality of the individual. The rest would follow. They must help artists to resist the temptation of the roads that legend said were paved with gold. If the theatre was ever going to play a serious part in our civic life it would have to be definitely acknowledged and protected by the leaders of the community. The vicissitudes which the drama had undergone and survived proved that it was a vital part of the lives of the masses. If it were to recover any nobility of expression, any example, it would not be by the direct demand of those masses. A nation that still required the assistance of an official whose sole business it was to see that parents sent their children to school to be educated, would certainly not rise up and demand a living theatre for many generations. The mass did not demand the establishment of free libraries, it did not demand the equipment of museums and art galleries; in fact, there were many remonstrances owing to the rise in the rates. If the citizens of any community were not born great, if they did not achieve greatness, it was the moral obligation of its leaders to thrust greatness upon them.

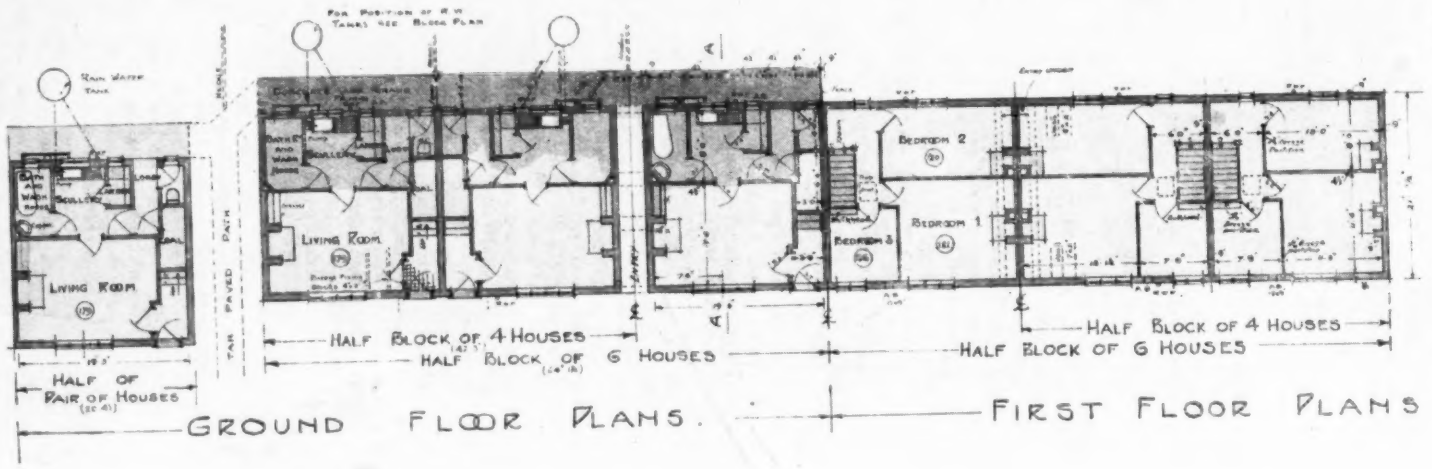

OPTICAL CORRECTIONS IN ARCHITECTURE
B B
A A
Σ Σ
E E
Λ Λ
O O
VISUAL RAYS
A
B
X
Y
CORRECTION OF APPARENT PROPORTIONS.
FROM AN INSCRIPTION ON THE FACES OF THE ANTÆ OF A TEMPLE AT PRIENE.
EFFECT OF COLOR ON PROPORTIONS
IN X THE METOPES & CELLA WALL BEING BLACK THE COLUMNS APPEAR STURDIER & THE ARCHITRAVE, TRIGLYPHS & CORNICE HAVE IMPORTANCE. IN Y WITH REVERSED COLORING THE COLUMNS APPEAR THINNER & HIGHER AND THE ENTABLATURE LOSES IN IMPORTANCE.
34'2·88
AXIS OF COLUMN
2·63
3
2
1
D
A C
D B
METHOD OF DRAWING ENTASIS OF COLUMN:
AB & CD ARE BOTTOM & TOP DIAMETERS RESPECTIVELY DESCRIBE SEMICIRCLES ON THESE, & AT C ERECT PERPENDICULAR CUTTING LARGER ONE IN X. DIVIDE SEGMENT AX & HEIGHT OF COLUMN INTO ANY NUMBER OF EQUAL PARTS - SAY 3 - & NUMBER BOTH 1,2,3 FROM A. THRO' THE POINTS 1,2,3 IN SEGMENT ERECT PERPENDICULARS CUTTING CORRESPONDING DIVISIONS OF THE HEIGHT. THROUGH THE POINTS THUS OBTAINED DRAW CURVE.
THE PARTHENON ATHENS
THE EAST FRONT
E
F
G
2'64 RISE
INCLINATION OF 2'65
2'61 RISE
C THE PARTHENON
INCLINATION OF COLUMNS, FRIEZE AND ARCHITRAVE.
H
PARALLEL STRAIGHT LINES HAVING CONVEX CURVES ON EITHER SIDE APPEAR WIDER APART IN THE CENTRE
J
PARALLEL STRAIGHT LINES HAVING CONCAVE CURVES ON EITHER SIDE APPEAR CLOSER TOGETHER IN THE CENTRE. A SIMILAR EFFECT PRODUCED BY INCLINED LINES AS INDICATED IN H & J BY DOTTED LINES.
E THE TEMPLE FRONT AS IT APPEARS IN EXECUTION WITH CURVED HORIZONTAL LINES AND INCLINED VERTICAL FEATURES AS AT G.
F THE TEMPLE FRONT AS IT WOULD APPEAR IF BUILT AS AT E WITHOUT OPTICAL CORRECTIONS.
G THE TEMPLE FRONT ARRANGED WITH THE VERTICAL AXES INCLINING AND WITH CONVEX STYLOBATE, ARCHITRAVE, ENTABLATURE AND PEDIMENT, PRODUCING RESULT AS AT E.

From "A History of Architecture on the Comparative Method." *See page* 561.

BOROUGH OF NUNEATON · GROUPS OF 'A' CLASS HOUSES FOR SOUTHERLY ASPECT
(TYPE 10)







FLOOR AREAS END HOUSES 765 FEET SUPER
CENTRE - 803 " "
CUBES PAIR OF HOUSES 17856 FEET CUBE
BLOCK OF 4 - 35537 " "
" " 6 " 56029 " "

DIMENSIONS AND NOTES REFER TO ALL HOUSES UNLESS OTHERWISE STATED

R.C. MOON AM.Inst.CE
BOROUGH SURVEYOR
MAY 1921

MR. R. C. MOON, A.M.Inst.C.E., Borough Surveyor, Nuneaton. (See p. 567.)

THE ROYAL ARCHÆOLOGICAL INSTITUTE.

Examples of English Alabasters.

In a paper on "Some Unpublished Examples of English Alabasters," read before the Royal Archæological Institute on Wednesday last week, in the apartments of the Society of Antiquaries, Burlington House, Piccadilly, Dr. Philip Nelson, M.D., F.S.A., described a number of examples of mediæval alabaster carving.

In the course of his remarks, the lecturer said the Virgin Triptych, at Danzig, a well-preserved specimen, measuring about 8 ft. in length by 3 ft. in height, contained five large panels representing "Joys of the Virgin." The panels were: The Annunciation, Adoration of the Magi, Resurrection, Ascension, and the Coronation of the Virgin. All had attached canopies of the "embattled" type, with the exception of the third, which consisted of three crocketed gables, flanked by buttresses, of which the central ones had animal-head pendants. Stretched across the reredos, except in the centre, was an oak cresting, carved with open tracery-work surmounted by fleur-de-lys. On the sides of the panels and centre-piece were wooden chamfers enriched with blocks of gilt and colour, the former adorned with gesso knobs, and the latter with painted leaf-work. Across the base of the triptych was a broad band of wood, the upper third of which was treated in the same style as the chamfers; and beneath, in contracted Latin, in Gothic characters with Lombardic capitals, were much-perished inscriptions descriptive of the various carvings. The occurrence in the third panel—the Resurrection—of an attached triple-gabled canopy was of the greatest importance, said the lecturer, affording as it did the date of other pieces presenting that peculiar feature, *e.g.*, two panels from the Martyrdom of S. Catherine (Victoria and Albert Museum, and Copenhagen), a Trinity in the collection of Mr. Grosvenor Thomas; and the centre-piece from a Doom series in the British Museum, which latter may have emanated from a York atelier, and dated from *circa* 1430. The Coronation of the Virgin by the three Persons of the Trinity was a mode of treatment met with for the first time in this panel, and afterwards persisted in throughout the remainder of the alabaster industry. The backgrounds of the several panels were of gilt, dotted with gesso knobs, whilst the foregrounds in green were strewn with flowers with white petals and red centres. The lecturer said he regarded the triptych as dating from *circa* 1425, and as having been executed at York.

An unusual panel, formerly in a S. Catherine reredos, was one which represented the Burning of the Alexandrine Philosophers, evidently from the same set as the Decollation of S. Catherine, in the Victoria and Albert Museum. The date of the work was *circa* 1430, and it was probably of the York school. Some other interesting carvings were "The Noble Army of Martyrs," corresponding with the panel in the vestry of S. Peter Mancroft, Norwich; the Martyrdom of S. Thomas of Canterbury, following very closely the description of the murder given in the Icelandic Saga; a S. John's head, in the Metropolitan Museum, New York, and another in the museum at Orleans, of which only the lower part remained; three panels in S. Mary's Church, Shrewsbury, from a S. John Baptist reredos; S. Anne presenting the Virgin to Joachim, in the Metropolitan Museum, New York; a wide and remarkable panel of the Annunciation, in the museum at Falaise (Eure); a narrow panel of the Assumption, in Cookhill Priory, Worcestershire; a large pieta in the possession of M. Stora, Paris, similar to the example at Yarnton, Oxon, which probably dated from the earlier years of the fifteenth century; and a unique panel, in the museum at Orleans, depicting the baptism of S. Martha and Lazarus, which apocryphal incident was referred to in the "Legenda Aurea," Caxton.

Illustrations of these and many other interesting examples of this ancient art were given by means of lantern slides.

BOOKS.

National Art Survey of Scotland, 1921. Part III: Argyll Lodging, Stirling, and Cowane's Hospital, Stirling. Edinburgh: Geo. Waterson & Sons, Ltd.

In this third issue of the "National Art Survey of Scotland" the quality of the two former publications is amply maintained by the reprints from measured drawings of the Argyll Lodging, Stirling, and Cowane's Hospital, also of that place, by Mr. Ramsay Traquair. The Lodging is a particularly fine example of a Scottish nobleman's house of the first half of the seventeenth century, with buildings arranged around three sides of a courtyard fenced in across the street front with a high wall pierced by a handsome gateway in the centre of its length. A smaller doorway or postern opens into a one-story building between the central gate and the stair turret of the left-hand wing. The building has walls finished in harled-stuff with stone dressings, and presents the familiar appearance of a Scottish mansion with conical-roofed stair-turrets, corbie-stepped gables, and rich stone moulded dressings around its windows and doors, which are surmounted with decorative carving above their lintels. A rectangular panel in the wall above the front porch contains a carved coat of arms of the Earl of Stirling. The windows of the mansion are double-hung sashes with well-proportioned panes, those of the upper story (second floor) rising through the eaves with gabled heads as dormers. The bold square-sectioned guttering is carried across their faces. Internally the building contains (on the ground floor) some vaulted chambers, one of which is provided with an enormous chimney recess equal in width to the room, or about 14 ft. Four staircases of spiral form rise to the upper floors and permit of some privacy in the approach to the several rooms which would otherwise, owing to the lack of passages, become corridors to one another. A grand open newel staircase mounts from the ground to the first floor and serves as access from the hall to the main reception-room, some 35 ft. in length. The lower photograph on Plate 40 shows the upper landing of the grand stair obstructed by an unpleasant match-boarded partition, but this is obviously an innovation. In the same photograph is seen the entrance to the fourth spiral stair, which starts from first-floor level and seems to be of stone corbelled out from the angle of two main walls of the house. The photographs, measured drawings, and details taken together amount to a very full representation of a pleasant and dignified mansion.

Cowane's Hospital was erected for its philanthropic purpose through the benefactions of a Scottish merchant of the seventeenth century. At a meeting of the Town Council of Stirling, in 1634, Alexander Cowane reported that his deceased brother had bequeathed "forty thousand merks . . . to be waired and bestowed upoun ane hospitall or almoushous to be buildit in sum commodious place within this burgh for sustenying thereintill the number of tuelf decayed gildbroder, burgessis and induellars of the said burgh . . . to be callit in all tyme cuming Cowane's Hospital." The interior of the building has undergone some alterations, its two halls having been converted into one by the removal of an intermediate floor and the insertion of a modern memorial window in the eastern gable. Following a Scottish tradition, the staircase shares with the entrance doorway a projecting turret, in this instance placed in the centre of the front, between two projecting two-story wings. A raised balustraded terrace runs past the east end of the building and overlooks a garden at a somewhat lower level. The appearance of the Hospital, with its characteristic dormers and gables, is decidedly picturesque, though its effect is somewhat marred by modern chimney cowls on the top of the masonry stacks and by a too prominent notice-board advertising the adjacent bowling-green. It is a matter for regret, too, that iron railings should be found necessary between the courtyard and the garden; the wall on the west, which separates the Hospital from the graveyard, is much more in keeping with the style of the building. Some clear details are given of the balustrade on the terrace, chimney copes, door jambs, and of a panel inscribed with the date, 1638 I.C.

Possessors of the two former portfolios should certainly add the present publication to their libraries.

Lockwood's Builders', Architects', Contractors' and Engineers' Price Book for 1922. Edited by J. P. Allen, P.A.S.I. London: Crosby Lockwood & Son. Price 7s. 6d. net.

We are optimistic enough to believe that the building trade after some years of instability is settling down to a normal—if not pre-war—condition, so that the work of the revisers of price-books will be of a more definite character than has been possible for some time. A comparison of the prices in the edition of "Lockwood" now under notice with that of last year is most interesting. At the same time, while one must look with satisfaction on the reduction in the prices for timber work, the comparatively small reduction in those for concreting, bricklayer's work, and cast-iron work (in the shape of rainwater goods and other similar light work) are anything but satisfactory. The editor has done his work well under the circumstances. He has taken into account the facts at his disposal, and has produced a work of as useful a character as it is fair to expect at the present time.

Appendix G. on page 474 is a very interesting one, but its usefulness is impaired by the fact that it leaves off at October, 1920. As the prices throughout the work are based on rates of labour in November, 1921, we certainly feel that this table dealing with materials might have most usefully been extended to the same date. We hope that with the next edition it will not be necessary to have notes such as those on page 205, and pages 282-294—in the latter case stating that approximately 100 per cent. (and in some cases 150 per cent.) should be added.

Books Received.

The Renaissance of Roman Architecture. Part II. By Sir T. G. Jackson, Bart. (Cambridge: The University Press.) Price 42s. net

English Church Monuments A.S. 1150–1550. By Fred. H. Crossley. (London: B. T. Batsford, Ltd.). Price £2 net.

Chemistry. By George Thompson and George H. Leslie. Part 1. (London: Cassell & Co., Ltd.). Price 2s. net.

Specification. (London: Technical Journals, Ltd.) Price 10s. 6d. net.

NUNEATON HOUSING SCHEME.

We have received the following letter from Mr. R. C. Moon, Borough Surveyor, Nuneaton: "Sir,—I enclose herewith a list of tenders received for 24 houses proposed to be erected in the borough, which possibly you may care to publish. The amount of the lowest tender is rather remarkable in view of the fact that it is based upon Grade "A" building trade wages, and the tender is submitted by a firm of standing and repute. The houses, it will be seen from the plan [given on page 566], are of brick with slated roofs, and conform to the Ministry of Health's standard with regard to accommodation. The tender referred to also includes for, in addition to the usual provisions, an underground rain-water tank for each house, with pump, special type 42 in. range, and a supply of hot water to the bath."

The following is a list of the tenders:—

	Total.	Average price per house.*
F. Garner & Sons, Leicester	£10,800 0 0	£450 0 0
E. O. C. Howells, Coventry	10,315 0 0	429 10 0
G. E. & W. Wincott, Nuneaton	10,240 0 0	426 13 4
Meigh & Green, Nuneaton	9,933 17 4	413 18 4
E. A. Whittaker, Nuneaton	9,824 0 6	409 6 8
G. Cooper, Nuneaton	9,679 14 9	403 6 6
E. Morley & Son, Derby	9,246 0 0	385 5 0

* These figures include drains paths, and fences.

(See p. 567.)

Mr. R. C. Moon, A.M.Inst.C.E., Borough Surveyor, Nuneaton.

INDUSTRIAL EXHIBITIONS.

LAY-OUT AND STALLS.

IN contradistinction from international and commemorative festivals which aim at the display of a high standard of artistry in the lay-out of their grounds and buildings, industrial exhibitions are designed confessedly to stimulate the advertisement and exchange of commodities, so that it can hardly be wondered at if they sometimes present an incongruous appearance with their riotous array of material crowded into a confined space. Each manufacturer or merchant invests in a stall in the hope of profit, and though the heterogeneous objects gathered together may compose a startling ensemble, they do not often beguile the æsthetic sensibilities of the visitor. Hard practical laws of commercial efficiency are supposed to control the whole affair, and art is only given a prominent place in the stalls of those exhibitors who have "art" goods to put before the public. Britons cling to the pathetic hope that great beauty may come to life and grow in this individualistic soil and, once in a while, a happy-go-lucky procedure may create a really interesting and picturesque composition; but it is open to question whether the best results can be obtained in this manner. When the exhibits differ greatly from one another in size and colour it may seem difficult to devise any method for their systematic arrangement from an artistic as well as a practical point of view, and it is generally abandoned, at the outset, as hopeless. But in putting on one side all considerations of artistic arrangement, practical convenience may also suffer neglect.

A visitor to a trade exhibition making a note of his experiences might obtain an insight into the merits and defects of its planning. On entering an exhibition building the visitor finds himself in a more or less congested knot of people struggling to pass in different directions, or even to stand still to look at a demonstration at the stall of some enterprising exhibitor who has purchased the coveted spot near the door on the assumption that all who pass in and out will look at his wares. After loitering for some time, buffeted and buffeting, and, perhaps, catching a glimpse over shoulders and between hats of the stall which is attracting the crowd, the visitor at last struggles out of the throng into the path of those who, tired with sight-seeing, are attempting to make their way through the blockade to the exit. Once well inside the exhibition and clear of the entrance, a network of small alleyways opens up before him. Each alley is, apparently, just like the next, and although they are spaced at regular intervals, they somehow fail to impress on the visitor's mind any sense of direction, while they begin at once to impress on him a very real sense of bewilderment, oppression and fatigue.

The stalls, although arranged on the approved gridiron plan, are placed so close together with such a number of equal passages as to forbid any distant view of any object. No general view is possible, since the corners of the adjoining booths obstruct the line of sight and forbid the visitor to see even the largely-printed names and numbers on their fascias at more than a few yards' distance.

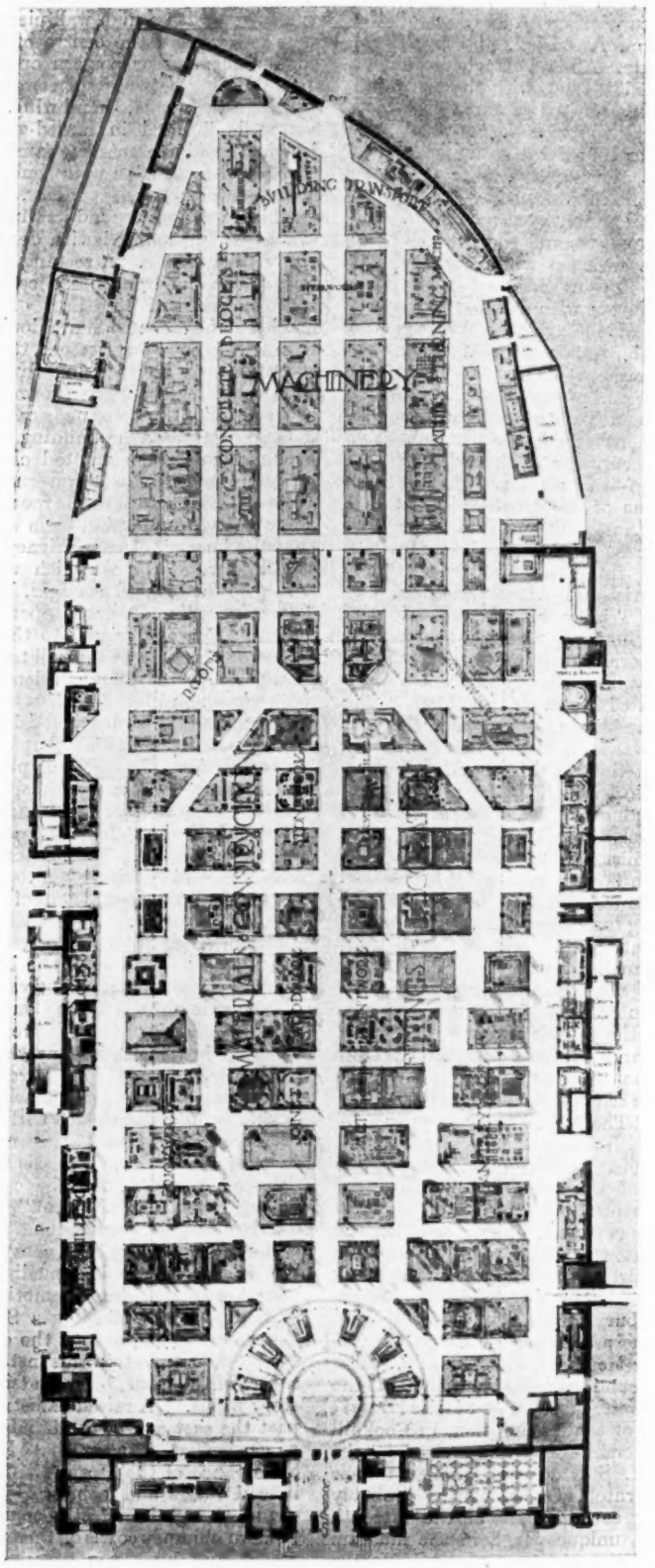
If attention is diverted for an instant it is easily possible to overshoot the objective and end by wandering aimlessly about from stall to stall. Supposing the visitor to be a strong-minded person, capable of resisting the call of objects expressly displayed in a manner to attract notice to themselves, he will soon realise that he has lost his bearings and will take pains to verify his position. After consulting the map in the catalogue and making several inquiries as to the position of the stall containing the goods in which he is principally interested, the visitor realises that he is at the wrong end of the hall and makes a valiant attempt to thread his way to the spot, though stopped some half-dozen times before he manages to reach his destination by crowds gathered to witness demonstrations.

It may be questioned how far these inconveniences are inevitable; for the most artistic and carefully planned exhibitions often involve a great deal of strain and fatigue, but it is to the advantage of all concerned to discover whether some other arrangement of the exhibits might not have preserved more precious time for actual business purposes.

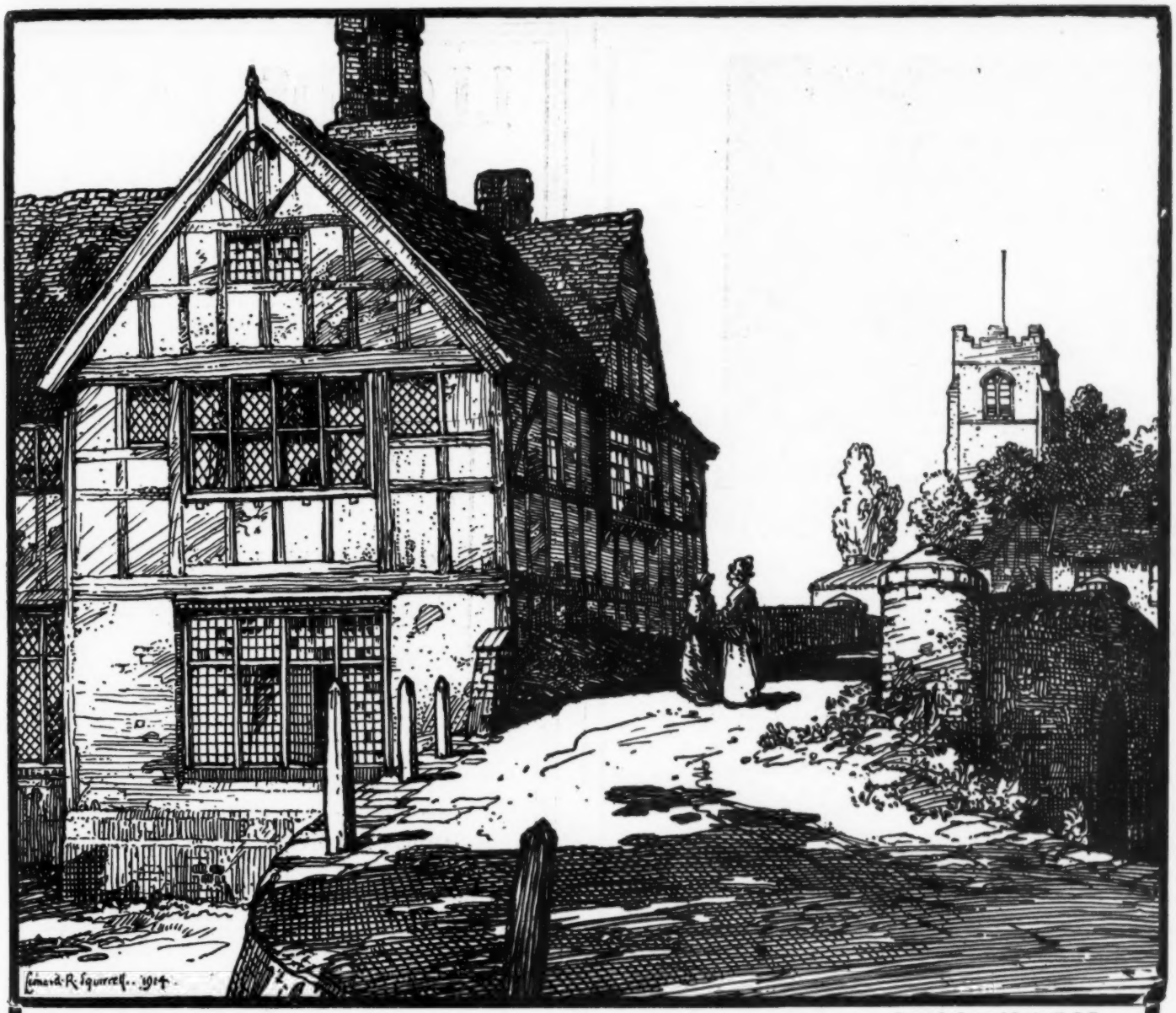
THE R. A. ATELIER STUDENTS' COMPETITION.

A competition open to atelier students, promoted by Mr. H. Greville Montgomery, Director of the Building Trades' Exhibition, who is to be congratulated on his public spirit in the matter, gives ground for hope that the future holds better things in store. That the architectural profession should have been consulted is a great step in advance, and the design awarded first prize for a lay-out (illustrated in our last issue) indicates a very considerable improvement in the important matters of centralisation and focus. A plan of the great glass-roofed hall at Olympia was given as site, and competitors were asked to show how the maximum amount of space for letting might be obtained within reasonable access of the two entrances.

This condition proved too hard for some of the unsuccessful competitors, who felt compelled



Royal Academy Ateliers Building Exhibition Lay-out Competition.
"Commended" Design, by MR. B. FRASER (First Atelier).
[The premiated designs in this competition were given in our last issue.]



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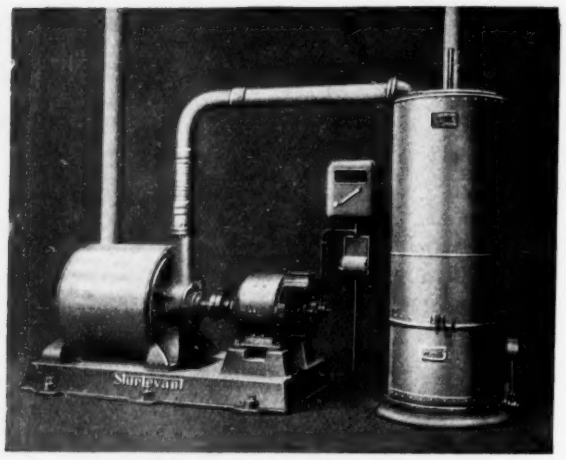

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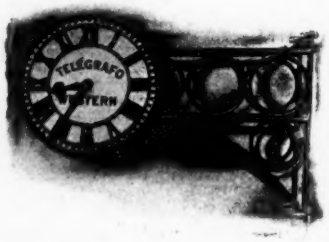

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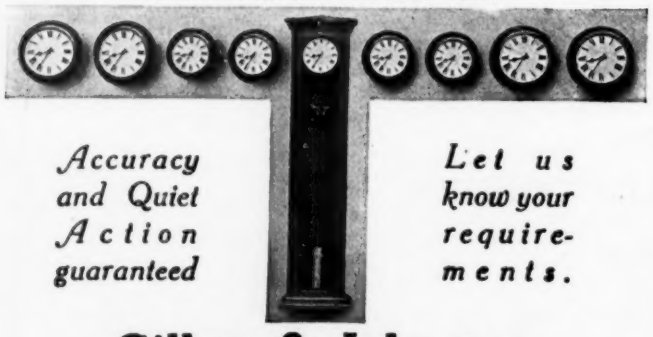

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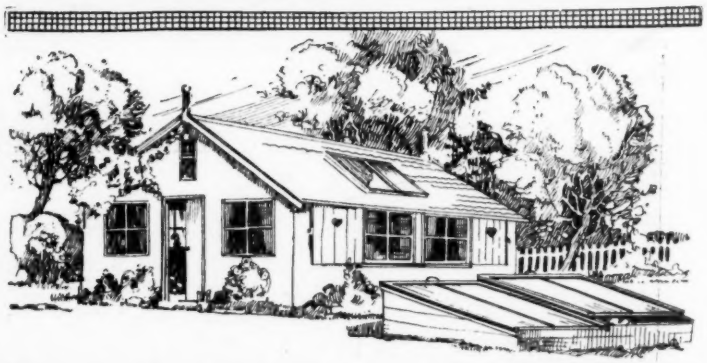

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Wherever any glass gets broken replace it with "Windolite."

"Windolite" will be demonstrated at the Building Trades Exhibition, Olympia, April 11th to 27th, Gallery Stand No. 10a; and Royal Horticultural Society's Chelsea Show, May 23rd to 25th, Stand in Royal Avenue.

WIDTHS.	23½-inch.	27½-inch.	31-inch.	35-inch.	39-inch.
PRICE PER YARD.	4/11	5/8	6/5	7/2	7/11

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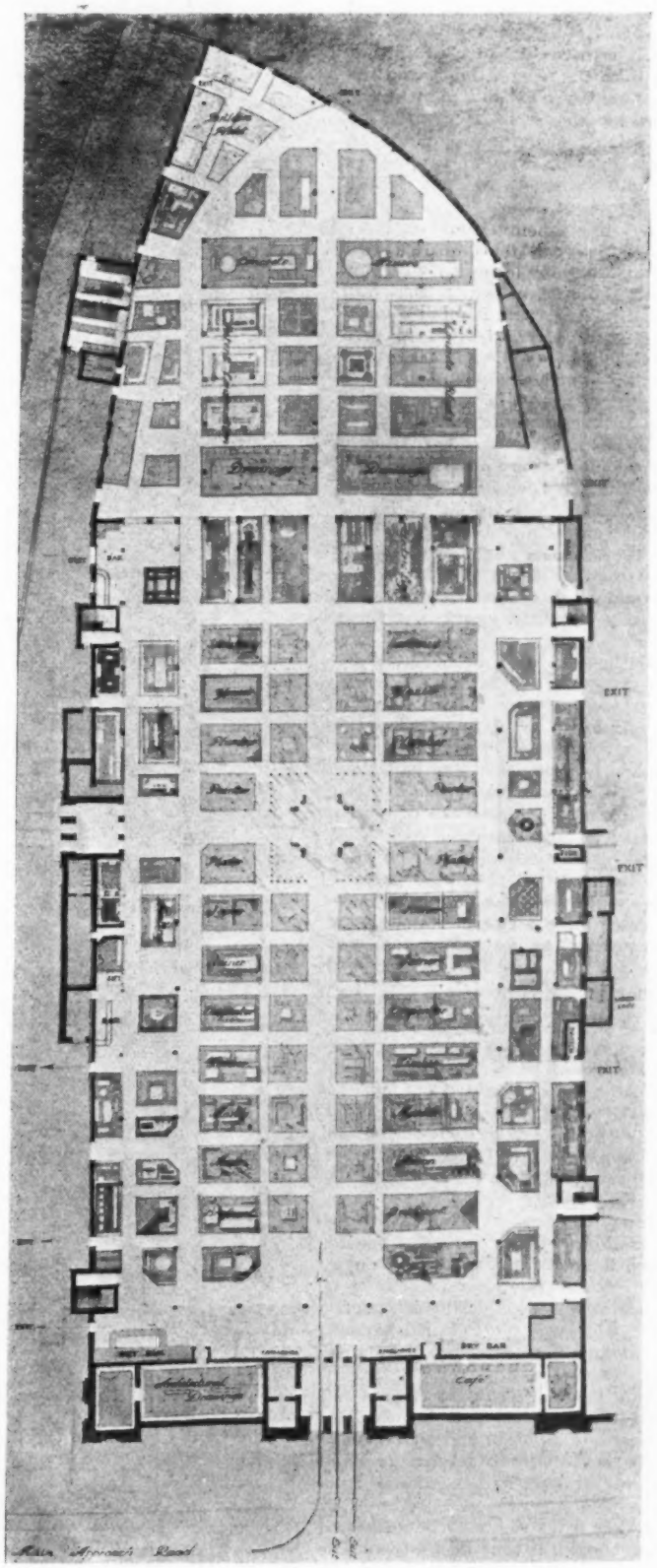
to adhere rather closely to the usual huddled-together type of planning. Even the prize-winners seem to have been hampered by the inclusion in their schemes of too many small individual stalls. The winner of the first prize scores, however, by providing an encircling and a central avenue of ample width with additional space at the main entrance and at the centre of the hall, where the avenue from the side entrance and that on the long axis intersect, in a principal exhibit of monumental character, surrounded by a square of floor space given up to the circulation of the crowd. This central space is flanked by stalls, designed with some feeling for architectural balance, and is crowned by a tent of decorative drapery depending from the roof of the hall in a praiseworthy attempt to give importance to the central exhibit and to introduce unity of scale throughout the exhibition and the gigantic shell enclosing it. The stalls and exhibits are indicated as of varied character, as the immense subject of building construction seems to demand, but the subdivision of the side areas into minute plots and passages perpetuates some of the complexity and confusion of the normal type of trade exhibition design. It would be too much to hope for improvement in all respects at once, and the design may be taken as advancing about as far towards perfection as would be likely to be adopted by practical business men, who already possess fixed ideas on the subject and who probably feel that extended frontage on all sides of a stall is an asset of such great value as almost to outweigh considerations of comprehensibility in the position of the stall on the plan. In view of criticisms sometimes levelled against centres of architectural training on the ground that students are encouraged only to deal with grandiose aspects of design, it is interesting to note that most of the plans submitted by the atelier students are almost too faithful in their adherence to the practices of the present day and have left to the future the development of the artistic possibilities of the case.

Some very charming stall designs were also submitted in competition, but they were all of a nature to require ample space instead of being cramped together in passage-ways of a width of, say, one-half their height. Some of these designs were published by us last week, and in this issue we give another. It is useless to put elaborate decoration or to print the name of the firm on a fascia 10 ft. above ground when the visitor will not be able to get his head more than 5 ft. away from the vertical plane in which the decoration is contained. The Chinese method of hanging signs out at right angles to the fascia makes for visibility in narrow streets, and stall numbers and names should be written on the corners of stalls and just above eye-level if they are to be seen in a crowd.

Without resort to any far-fetched expedients of architecture, or ransacking past history for precedents, it should be possible to formulate some rules for the convenient planning of exhibitions on the lines dictated by common sense. By far the greater number of visitors will only see the exhibition once, and even then will probably have only a limited time at their disposal. It is important, therefore, to make the lay-out of the place easily comprehensible to non-technical minds who cannot read a map without very considerable difficulty. An ideal exhibition should not puzzle and confuse the visitor at the outset; the main lines of its disposition should be apparent at a glance from any principal entrance and no obstruction should be permitted between the main door and the chief exhibit placed in a central position. A person entering should find himself in an open space of sufficient size to permit of the free circulation of the crowd and which merges into a principal aisle of ample width leading directly down the full length of the hall towards the exhibit which best typifies the subject of the exhibition. It may be objected that width in the main access passage can only be obtained at the sacrifice of stall space, but it is absolutely necessary if visitors are to be able to see the character of the goods on either hand at a point a few yards ahead of them and so be enabled to walk directly towards the stall they wish to inspect. The stalls which are known to have the greatest power of collecting a crowd should be placed near the centre of the exhibition and farthest from the entrance, although in full view of it, so that a stream of visitors will be circulated through the veins of the place from the extremities to the heart, where ample space must be provided around the principal exhibits.

That this simple rule should ever be disregarded seems incredible, but recent exhibitions promoted in the interests of economy and efficiency have been most guilty in this respect. Exhibits with great drawing power were placed where they could create the greatest confusion in the traffic and force the stream of visitors to deviate down minor alleyways in passing to and from the entrances. In one exhibition where the principal exhibit was rightly placed near the centre of the hall, at the intersection of the main alleyways, no additional space was given about this central point; but, as it happened, none was needed, for the sanitary fittings displayed in the adjoining plots caused nervous visitors to scuttle past the neighbourhood without stopping at exhibits of general interest! The central spot which should have been the focus of the whole was very noticeably the least visited part.

Under the conditions now usually prevailing, where many different firms each take their part



Royal Academy Ateliers Building Exhibition Lay-out Competition.
Design by Mr. A. Lewis Curtis (First Atelier).

without submitting their proposed designs to a common director, it is difficult to see how these defects may be avoided.

A certain rudimentary sense of order possessed by some of the exhibitors mitigates the disastrous effect in respect of details, but the lack of systematic planning is paid for dearly in the difficulty of access and comprehensibility. Suggested improvements are met by the assertion that there is no money to pay for architectural schemes and that stall holders object to restrictions and want to do "exactly as they did last year."

This may be very true, and nothing is to be gained by minimising the difficulties before promoters or exhibitors, but the course of careful systematic planning is now almost invariably adopted in large public exhibitions and might well be applied to those conducted for trade purposes; it is necessary, however, that someone should take the responsibility and the initiative. At present the ground plan of the hall with spaces for the stalls is drafted by somebody. It would, therefore, be but an extension of the existing system to prepare a really adequate scheme to put before prospective exhibitors.

Whether or not this scheme would embody any question of elevational treatment to bring the design of the stalls into harmony with one another, or with the hall in which they are placed, it should, in any case, include a carefully arranged ground plan adjusted to give the utmost return in plot rents compatible with proper accessibility and visibility of the exhibits. There need be no doubt that increased efficiency would result from the use of expert planning, for more visitors would pass any given stall if the means of access and the position of the chief attraction were considered in relation to one another. Without attempting to impose any hard and fast "style" upon the exhibition, the appearance of the whole might be enhanced by a suitable disposition of the stands so that small stands would be assembled in rows with large and high ones to mount guard over them at the ends.

The right solution can only be achieved by considering the subject in the broadest possible manner; the nature and appeal of the various shows must be taken into account, as well as the convenience of the public and staff. If any decorations are to be put up in the hall they should be designed to be in harmony with the nature of the exhibits so that the scheme reads as a whole and not as an assembly of disjointed parts. When the exhibition is overlooked from a balcony it is essential that the upper parts of the show cases should present a seemly appearance and not resemble a series of waste-paper baskets and dust traps as is so often the case at present.

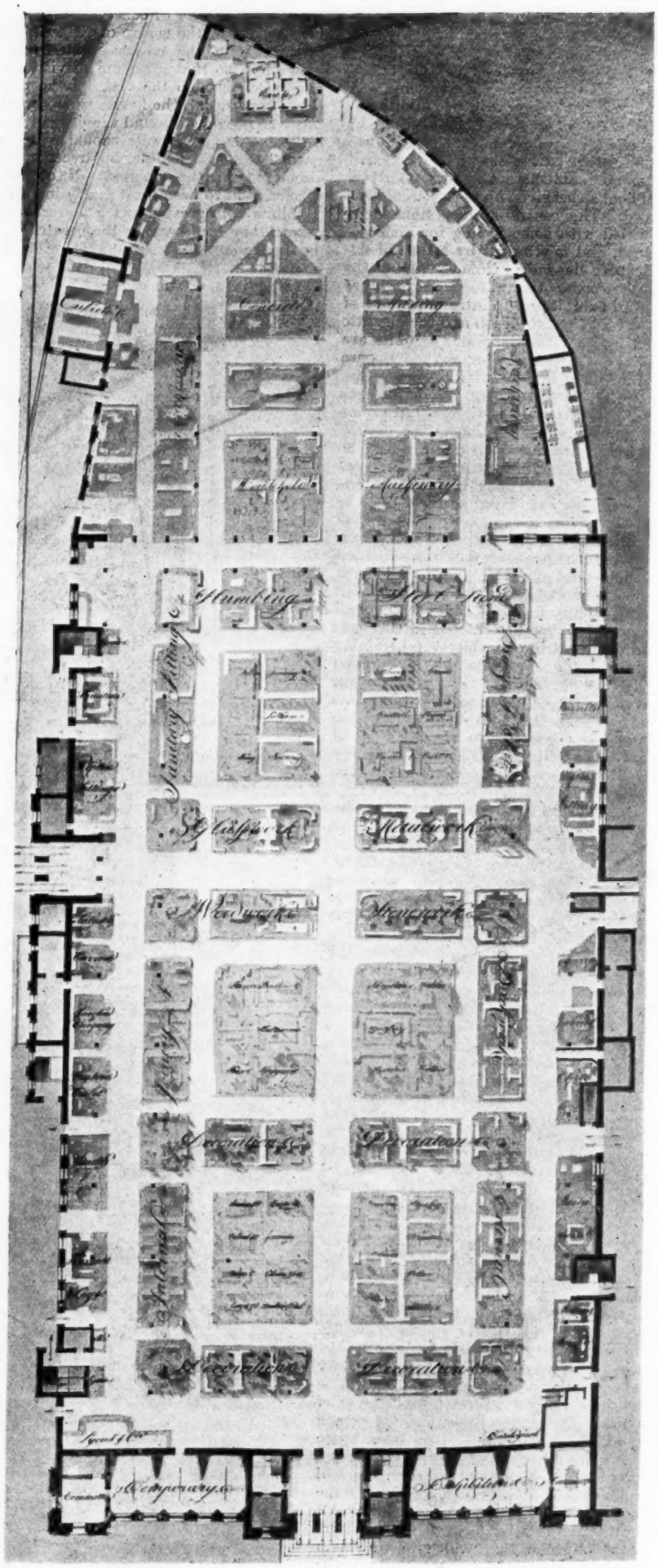
Port of Bougie.

According to a notice which appeared in the *Echo d'Alger*, of March 12, 1922, the Government General of Algeria is inviting tenders for the construction of the outer port and first part of the inner port at Bougie. The more important works are the construction of 3,000 metres of jetty and 800 metres of quay wall, and 1,800,000 cubic metres of dredging.

Firms wishing to tender should forward applications without delay to M. Scotto, Chief Engineer, 3 Rue des Vieillards, Bougie. The application must be accompanied by a declaration indicating their desire to tender, with name and address, &c. Detailed particulars should be given regarding works of a similar nature already carried out.

His Majesty's Consul General at Algeria has been informed that tenders will be accepted during the next four months, and that no distinction will be made against tenders received from foreign firms as against those received from local houses.

United Kingdom firms who may be interested in this scheme, should, if they desire to receive further particulars when they are available, communicate with the Department of Overseas Trade, 35, Old Queen-street, London, S.W. 1. (Ref. D.O.T./F.E./7674/P.N.)



Royal Academy Ateliers Building Exhibition Lay-out Competition.

Design by Mr. B. George (First Atelier).

THE BUILDING TRADES' EXHIBITION.

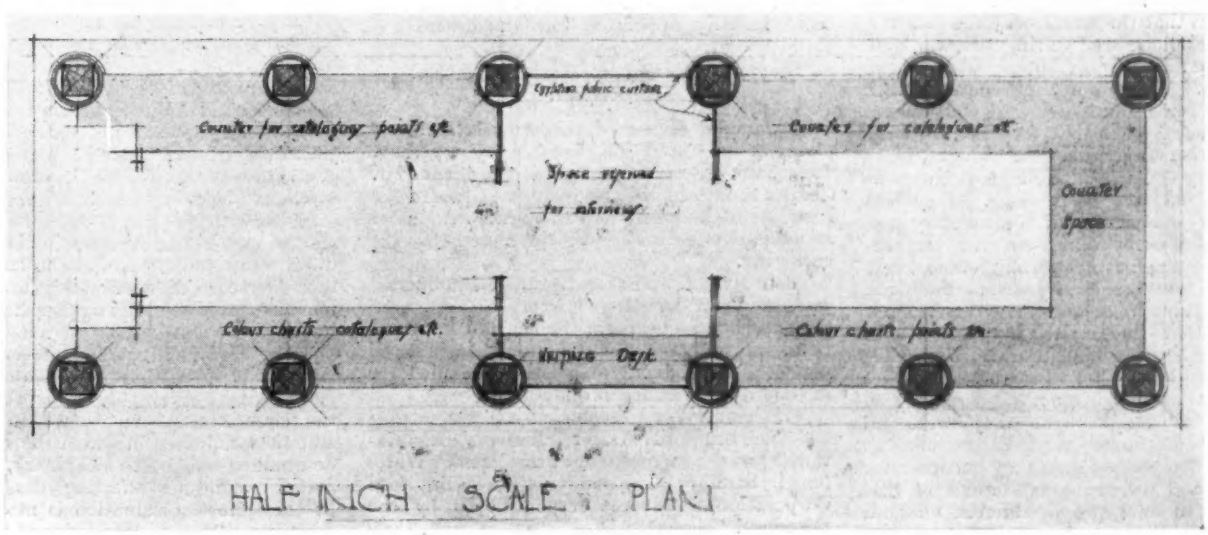
THE OPENING CEREMONY.

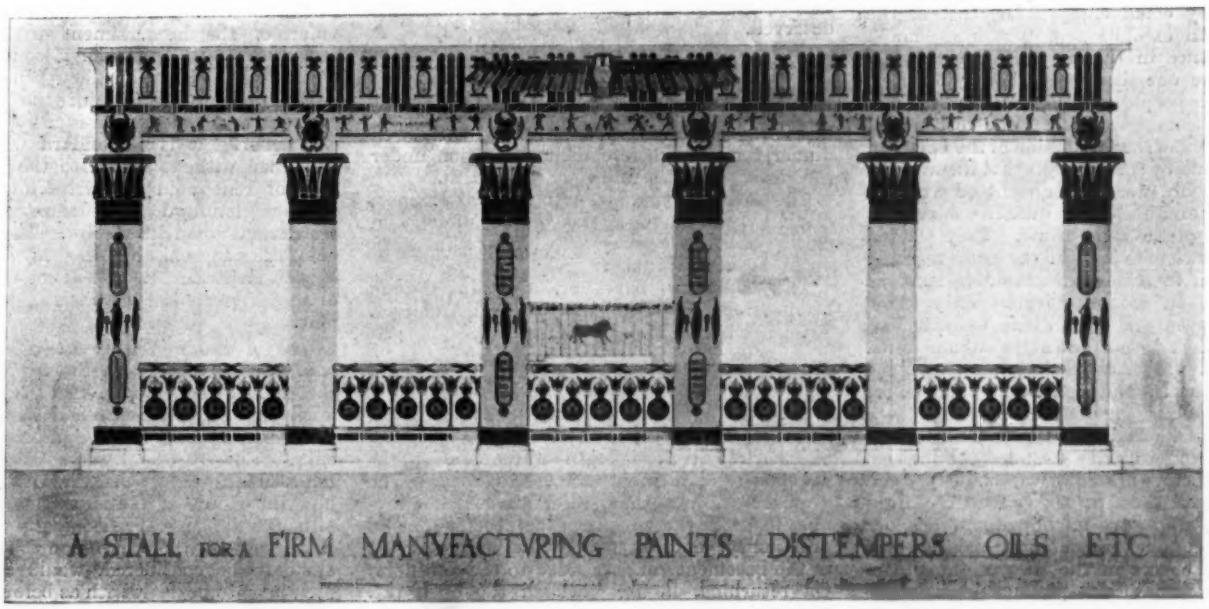
On Tuesday there was a large gathering in the Pillar Hall, Olympia, for the opening ceremony of the Building Trades Exhibition. Mr. H. Greville Montgomery presided, and amongst those present were Sir Henry Maybury (Roads Board), Sir Henry Tanner, Sir Geo. Frampton, Sir F. Baines, Sir Lawrence Weaver, Sir Charles Ruthen, Sir Frank Short, Sir Arthur Bryceson, Sir Bramwell Thomas, &c.

The Chairman said that was the third exhibition which had been held since the war, and it was not intended to revert to earlier practice and make the event biennial, so that the next exhibition would be in 1924. It was 27 years since he commenced the exhibitions and his aim had been to make them worthy of the great building industry. He thought it would be agreed that he had done so, for every inch of the available space was filled by exhibits which were intimately connected with the industry.

Mr. Paul Waterhouse (President of the Royal Institute of British Architects) said it was a great honour and a great interest to him to declare the exhibition open, but he could not help feeling that his was an insignificant performance. Those of them who were the happy possessors of a jack-in-the-box in their early days would remember that the woolly monster was released by the aid of a small hook-and-eye arrangement, but there was no credit to the persons who lifted the lid. The credit lay with the man who stuffed the woolly thing into the box, in the first instance, and the spring. Now the organiser of the Exhibition had been engaged in stuffing the very elegant monster with the box, and as to the spring they had it in Mr. Montgomery, and if he (the speaker) was successful in his little operation of raising the lid the result would not be due to him but to those who made the preliminary arrangement. To those who were architects the construction of the buildings at the Exhibition was the most interesting. When he left school and went into his father's office there were several mysteries which struck him. He found they were baffled by the quantity surveyor, who always had some new word to describe a thing, and another mystery was how to know the things they wanted to buy. Mysterious gentlemen called at the office and one gradually got to know them and many became friends. We did not go to a shop and buy things, but by mysterious means got to know where a thing was to be bought. For that Exhibition the producers of materials brought their goods before them and gave them the opportunity of studying them and of discussing them; and the various specialists brought their goods and put them one against another. This was a time of hope. They had been through sad days in the building industry, but if one came to think of it this was essentially a time of hope.

Most people said that building had been in abeyance because it was a luxury and not a necessity, but if they thought for a moment they would see that was not so. The only reason why building had had to take a back seat during the war and after was because buildings lasted longer than suits of clothes. During the war many of them made their clothes last a long time, but at last they had to have new ones. Had the war continued they would have had to have had buildings just as they had to have clothes. It was merely the relative lasting qualities of buildings and clothes which made the difference. Both were necessities, and they must be perfectly certain that building was coming into its hour in time, and that shortly it would be said that "necessity knows no law," and if there was any truth in that it was because necessity was a law unto itself, and one law which necessity was bound to rectify was that of demand and supply. That law was bound to operate, and equilibrium would, he thought, be shortly established, and they would find





Royal Academy Ateliers Building Exhibition Stand Competition.

Design by MR. E. R. ARTHUR, (Liverpool Atelier).

human interest in building operation as lively as ever. He felt sure that the Exhibition would be visited by persons largely interested in building. He would like to say a word or two about the personnel of the exhibitors. He had been a good long while in architecture, and like other architects who had been long in practice in London it meant that they came into contact with many of those who were largely doing the work of the building industry. He was sure all the architects present would agree that they had made amongst those who were producers of building materials many happy friendships. There was nothing more delightful to the architect than to realise that the man with whom he worked was a man whom he could make a friend and not merely have business relationships. After all, the architect was reminded from time to time that he was only the top builder and all those who worked with him would be the more happy if they had the foundation of friendship in their relations. He declared the Exhibition open in the name of the architects and in the name of the very large and flourishing Institute of which at the moment he happened to be President. He felt it was right that the architect should be one to wish the Exhibition prosperity and success.

Mr. A. J. Forsdike (Past-President of the National Federation of Building Trade Employers of Great Britain and Ireland) proposed a vote of thanks to Mr. Waterhouse. The interests of the builders were so intimately associated with those of the architects that it was difficult to divide them. Mr. Waterhouse had told them that the reason why the building trade had not done well during the war and after had been because buildings lasted longer than clothes. There were, of course, other reasons, one being the scarcity of men during the war, and the other that they had all been so busy in other directions. He thought, however, that they could look for a great improvement in the industry before long. They had thought that one section of the industry was in for a good time in connection with the production of houses for the working classes, but owing to the interference of someone the house building had come to an end. The Government had found that its tactics had resulted in failure. The building industry was responsible for providing houses for the working classes before the war until legislation was passed which stopped them. He thought they were all agreed that such houses must be produced at considerably less money than they had been for some time, and no doubt exhibitions of that kind tended to show people different methods of construction. He was one who believed they would only get the best by bricks and mortar, but there were probably some directions in which they could cheapen the cost of the house, and an exhibition of that kind should be of assistance in this way. What they all had to realise was that to get houses down to a price which people could afford to pay, there had to be a joining up of all the forces that were associated in the production of the building. It might be said by some people that the working man was the only profiteer, and a noted architect had accused architects and quantity surveyors and builders of the same thing. They wanted at the present time to draw all the forces together and get them to realise that building must be cut down to an economic level. They knew that the Wages and Conditions Council had made an effort to get down the labour costs, and an effort was being made to get down the cost of materials, and equally a great effort had to be made to get down the profit.

Mr. H. J. C. Johnston (President of the Institute of Clayworkers) seconded the motion, and said the clayworkers of the country owed a debt of gratitude to the late Mr. Alfred Waterhouse, who gave an impetus to the use of clay products in the country which had had far reaching effects in the way of the use of colour in the form of clay products in his architectural designs. It was a curious coincidence that during Mr. Paul Waterhouse's presidency of the R.I.B.A., that Institute should have inaugurated a colour competition in which clay products were an important feature. Mr. Waterhouse had spoken of the difficulty he had in his younger days of getting to know what manufacturers could do, but to-day much was being done in the way of collective propaganda, and the exhibition was a useful adjunct to that. It had to be remembered that the best medium for sales promotion was the quality of the goods offered. There had been some criticism of the quality of clay products and particularly of building bricks during the time of the so-called boom in the brick trade. He was afraid that in some cases there was justification for such criticism, but on investigation it was found that the makers of such bricks were not craftsmen in the true sense of the word. They were men who came into the industry because they thought there was money in it, and made bricks in the cheapest possible way, and sold at the highest possible price. The clay making industry was one of the oldest in the world, and if exhibitions of that kind helped to restore the craft spirit in the industry they would have served a useful purpose.

The resolution was carried and briefly acknowledged by Mr. Waterhouse.

New J.P.'s.

Mr. Arthur Seaton, building contractor, Pontypridd, has been added to the Commission of the Peace for Glamorgan, and Mr. Ogley L. David, builder and contractor, Skewen, has been similarly appointed for Glamorgan.

Bradford and District Master Plumbers' Association.

The annual dinner of this Association took place at Bradford on Wednesday evening. The chair was occupied by the president (Mr. Charles S. Howroyd), and representatives of the Institute of Plumbers and the Bradford Master Builders' Association were included in the gathering.

The toast of "The Institute of Plumbers" was proposed by Mr. Gabriel Jackson, who referred to the scheme for the benefit of apprentices, and said there could be no doubt that the young plumber would be better provided for in the future than he ever had been.

Mr. George Wood responded.

"The Bradford Master Plumbers' Association" was proposed by Mr. Frank White (chief Sanitary Inspector of the Bradford Corporation), and was responded to by the president, who remarked that it was their ambition that the future plumber should demand the respect which, by virtue of his own qualifications, they felt that the craft deserved.

Housing Commissioner's Staff Dinner.

The technical staff of the Housing Commissioner for the Welsh Region had a farewell dinner last week before their separation under the decision of the Ministry of Health.

The Commissioner, Mr. Arthur Lloyd Thomas, said he deplored the action of the Ministry in closing down at a time when most useful work could be accomplished.

The Regional Surveyor, Captain George Davies, L.R.I.B.A., and the Regional Architect, Mr. D. Griffiths, M.S.A., also spoke.

A Lift Accident.

Dr. Waldo, J.P., held an inquest recently, at the Coroner's Court, in reference to the death of Charles Steel, a night watchman at the warehouse of Lipton, Ltd., City-road. The evidence showed that, after the regular liftman had left the premises, the deceased, in all probability, entered the hydraulic goods lift in the basement and ascended to the first floor. On returning, he fell through the open lift. The jury returned a verdict of "death by misadventure." Dr. Waldo characterised all lifts as dangerous bits of mechanism, and stated that they should be regularly examined.

THE RENT ACT AND RATING.

The case Roberts *v.* Poplar Assessment Committee has been carried to the House of Lords and the decisions of the courts below (*The Builder*, May 20 and August 26, 1921) have been reversed. The case related to the assessment for rating purposes of a beer-house to which the Rent Act applied, and the effect of the decisions in the courts below was that as the Assessment Committee in ascertaining the gross value had to consider the annual rent which a hypothetical tenant would be prepared to give it was impossible to imagine that a tenant would give more than the law allowed, and therefore that the highest gross value which could be placed upon the premises was the standard rent plus any increases in rent allowed under the Rent Act. Premiums had also been given for the leases in question, but they were also held not capable of being taken into consideration.—The House of Lords has now reversed this decision (Lord Carson alone dissenting).

The case is very important as it had not been decided unanimously in the Court of Appeal, and its effect as there decided was practically to prevent the assessments of houses which were within the Rent Act from being raised except within the very narrow limits permitted by increases of rent within the Rent Act, but we must defer a consideration of the judgments delivered in the House of Lords until the case is fully reported with all the judgments. A report of the case with the judgment of Lord Buckmaster and the dissenting judgment of Lord Carson will be found in *The Times* for March 21, and it appears from that report that the reasoning applied was somewhat as follows: Under the Metropolitan Rating Act, 1869, the gross value is taken to be the annual rent which a tenant might reasonably be expected, taking one year with another, to pay for a hereditament on the assumption that he undertook to pay rates, taxes and tithe, and the landlord undertook the cost of repairs and insurance. The tenant referred to in the section thus summarised by Lord Buckmaster is an imaginary person, and the actual rent paid is no criterion unless it happens to be the rent that the imaginary person might reasonably be expected to pay in the circumstances mentioned in the section. But the conditions in which the rent has to be determined cannot be imaginary, they are the actual conditions affecting the hereditament at the time the valuation is made, and those conditions determine the value of the occupation to the occupier, and it is the value of the occupation to the occupier which is to be considered; but the provisions of the Rent Act regulate the value of the hereditament to the landlord, and so far as the occupier is concerned do not render his occupation less beneficial. Thus, in assessing the value of the hereditament the rent to be considered is as hypothetical as is the tenant; it is a standard which must be examined without regard to the actual limitation of rent paid by virtue of covenant as between landlord and tenant or statutory restrictions upon its receipt. Thus, the House of Lords has held that the restriction imposed by the Rent Act did not affect the assessment of the property on the basis of a hypothetical rent.

One of the questions asked in the special case was whether in calculating the gross value the capital sum paid on the assignment of the lease could be taken into consideration, that is, the premium paid on assignment, and in the court below it was held it could not. It is impossible to say at present with any certainty how the House of Lords dealt with this point, although the general reasoning in the judgment, if the value of the occupation to the occupier is alone to be considered, would seem to leave premiums to be dealt with as before, irrespective of the Rent Act. There is, however, a penal clause in the Rent Act relating to premiums, and we reserve our observations on this point until the judgments are fully reported.

ELECTRIC LIFT EQUIPMENT FOR MODERN BUILDINGS.—III.

BY RONALD GRIERSON, A.M.I.E.E., A.M.I.Mech.E.

COUNTERWEIGHTS, ROPES, ROPE FASTENINGS, CAR AND COUNTERWEIGHT CONNECTIONS, SHAFTS & SHAFT DETAILS.

Counterweights.

If a given load x has to be lifted through the distance y, then the work which will have to be done is xy, and if x is stated in units of pounds and y in units of feet the work will be xy foot pounds. If, however, another load, equal in weight to x pounds, which may be called x', is located at a height above x of y feet, then it is said to possess potential energy of $x'y$ foot pounds, due to its position or power to do work.

Again, if the load x be connected to x' by means of a lever having equal arms or a rope passing over a suitably-placed pulley, the total work expended on raising x, provided that x' be allowed to fall freely, will be zero (neglecting friction), *i.e.* :—

Given $x = x'$ then $xy - x'y = o$.

In lift work the problem of counterbalancing is not quite so simple, as the load to be lifted has one fixed and two variable factors, in addition to the friction losses of the gears, the sheaves, and the ropes. The fixed factor is the weight of the car, including the sling, the safety gear, and the guide-rail shoes; and the variable factors are the passengers and the length of rope between the overhead sheaves and the car. This latter factor varies with each position of the car in the shaft.

In the very early days the counterweight consisted simply of a length of cast-iron, usually square in section, the dimensions being at least six inches and the length from four to eight feet. This counterbalance weight was frequently enclosed in a wooden shaft or pocket, and was located at some distance from the shaft, but, owing to the absence of guides, it scraped against the walls of the box and was noisy in operation.

Usually, in lift construction, there is a space in the shaft between the car and the walls, and designers therefore proceeded to modify the arrangements by producing flat weights which could be accommodated in these spaces. The first flat type counterbalance weights were cast solid and on their longest edges tongues were provided, which were designed to run in grooves ploughed in soft pine guide-rails.

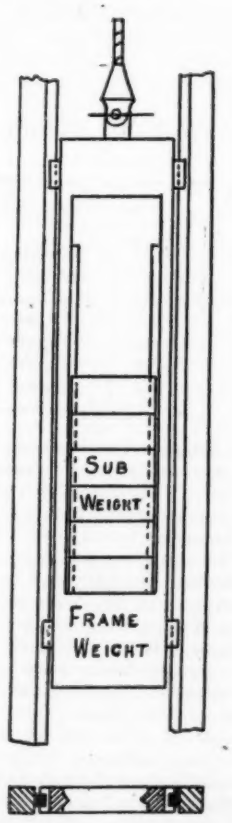


Fig. 16.—Early Form of Adjustable Counterweight.

Immediately electric motors were utilised for the operation of lifts, and the measuring of the power taken to start and to run the lift resolved itself on a direct-current circuit into one of merely reading an ammeter, it was realised that the existing forms of solid counterbalance weight were crude and uneconomical as regards energy consumption, and the adjustable type was evolved. The early forms of adjustable counterbalance weights consisted of a hollow frame-weight of cast-iron, the adjustment being made by the addition of a number of smaller weights, which were made to fit over V-shaped guides. The guide-rails of soft pine were found to wear badly and maple strips were therefore added, the edges being formed to suit the new type. (Fig. 16.)

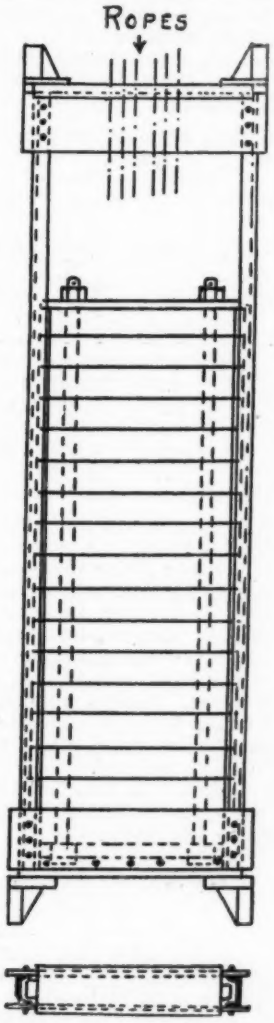


Fig. 17.—Modern American Counterbalance Weight.

Due to the well-known objection to using cast-iron in tension, and also to its liability to fracture should the rope break and the weight fall from a considerable height, the vertical members were replaced by wrought iron rods, the sub-weights being grooved at the ends in order to obtain a fixing. Again, this design was found to be unsatisfactory, as in the event of the failure of the supporting ropes the rods were liable to bend when the weight fell, thus allowing the sub-weights to scatter and in themselves become a source of danger.

This development practically brings us to the modern form of counterweight, which almost invariably in America consists of top and bottom steel plates with vertical styles of steel channel, which form a groove into which the sub-weights fit. The sub-weights are securely held together by two bolts which pass through the bottom plate. This frame or sling, which is not unlike the modern car-sling, it filled with adjustable guide-rail shoes but nos usually with safety gear (see Fig. 17). In England, some of the leading makers have retained cast-iron for the top and bottom cross-beams and wrought-iron rods for the vertical members, but have eliminated the risk of trouble due to the rods spreading by casting holes in the sub- or pocket-weights, and threading them on to the wrought-iron rods. This arrangement provides a sound engineering job, and is, in many respects, it is thought, superior to the American design described above. The guide-rail shoes are bolted on to the upper and lower weights. (Fig. 19.)

Many observations indicate that if an adequate number of lifts is installed the average load in the car is 40 per cent. of the maximum

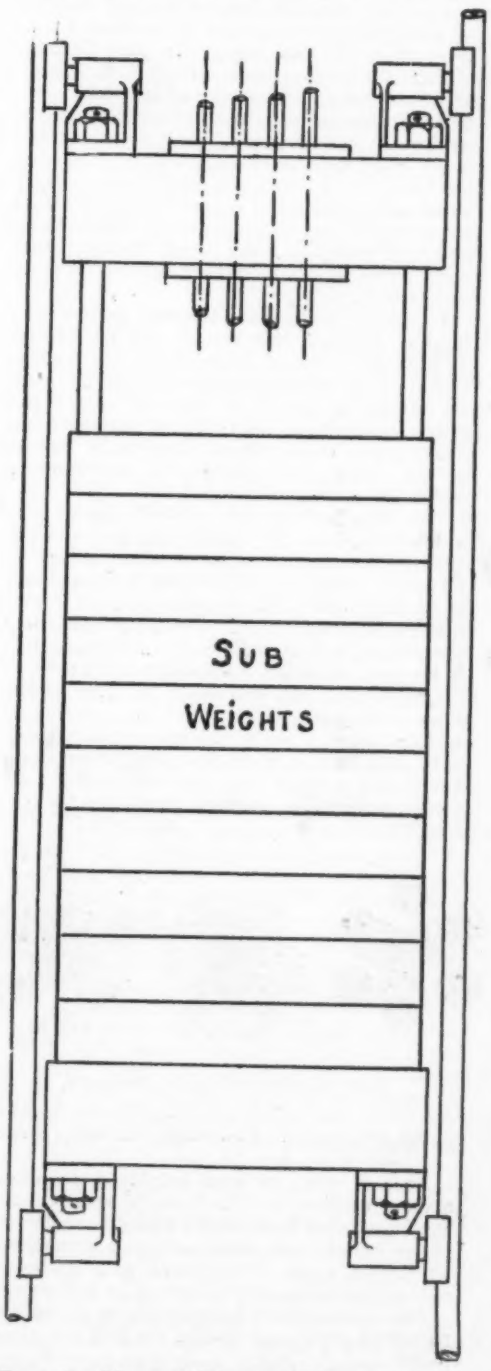


Fig. 18.—Modern English Counterbalance Weight.

load during periods of normal traffic, and specifications therefore usually call for counterweights to be provided, equal in weight to the dead load of the car, sling, safety gear, &c., plus 40 per cent. of the live load due to the passengers, based on a loading of seventy-five pounds per square foot of car floor area. The variable weight, due to the length of supporting rope between the overhead sheaves and the car, is relatively unimportant on short runs, but in buildings where the car travel exceeds 120 ft., it becomes a serious factor and is dealt with by connecting one or more chains between the bottom cross-beam of the counterweight and the bottom cross-beam of the car. These chains, which are allowed to hang in a loop a little above the floor, are liable to be noisy in operation unless special precautions are observed.

Suspension Ropes and Rope Fastenings.

No detail of lift equipment gives rise to more thought on the part of lift makers and to more anxiety to inspectors than the lifting ropes. Considerable diversity of opinion exists between experts on this subject, but all are agreed that the essential requirements are durability, flexibility, and great tensile strength.

American practice favours a good Swedish or charcoal iron rope, and it is claimed that these will far outlast any of the same diameter of even the mildest steel, but English makers with one or two exceptions, invariably put forward steel ropes. Certainly, to the layman, steel, as a material for lifting ropes, sounds much more impressive than soft iron of even the best quality, but cases exist in this country where steel ropes failed repeatedly, due possibly to excessive bending over small sheaves in awkward positions, but when Swedish iron ropes were substituted they proved entirely satisfactory.

Undoubtedly lift work is particularly exacting, as sheaves and drums are frequently, of necessity, of small diameter, and the leading of heavily-loaded ropes around a drum or over or around a sheave or sheaves means the constant alternate bending and straightening out of the cable, which eventually results in the well-known cracking of the wires of which the cable is composed.

The question of rope construction is also a debatable one. A popular arrangement consists of six strands of nineteen wires each (6/19) up to ½ in. diam., and six strands of twenty-four wires each (6/24) for larger diameters, but several makers use a 6/12 rope. The wires composing the strands, and the strands themselves, are laid in the same direction, an arrangement known as "Lang's lay," and frequently the core of the rope and also the core of the strands are formed of hemp cord. It is claimed for this hemp cord core that it provides a soft cushion on which the strands may rub when the rope bends during its passage over the sheaves (see Fig. 19).

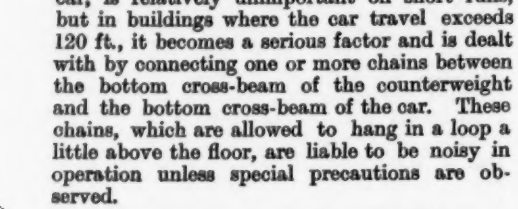


Fig. 19.—Wire Rope Sections.
A.—6/12 with hemp cores. B.—6/19 with hemp centre core. C.—6/24 with hemp cores.

Another form of rope employed by some makers consists of five strands, each strand consisting of an internal flat wire surrounded by eleven round wires, which are again surrounded by sixteen wires. The strands are, of course, oval and give a large wearing surface to the rope.

Some useful points to remember in connection with wire ropes, due to Mr. Hughes, are given below :—

(1) In general, use the lowest grade of steel (*i.e.*, low carbon content, in order to reduce the tendency to return to the crystalline form of structure with repeated bending).

(2) In general use a rope of medium flexibility.

(3) Use "Lang's lay" if possible.

(4) Ratio of sheave or drum to rope diameter should not be less than 26 ; 30 is better.

(5) If possible, employ a sheave or drum in which the ratio of diameter to rope diameter is 40, and then use a rope of low flexibility (*i.e.*, larger size of wire).

(6) In the case of peculiar double turns, use pulleys as large as possible.

(7) Avoid unnecessary reverse bends (*i.e.*, "S" leads).

(8) Keep the ropes well oiled. (*Note.*—The lubricant used must be one free from acid, such as vaseline, and should be applied with a brush and well worked into the body of the rope. Only the very thinnest coating of lubricant should be left on the surface to protect it from the effects of the atmosphere.)

Regarding the safe working load, Cullmer gives the figures shown in the table below fo 6/19 Swedish iron.

Strength and Weight of Swedish Iron Ropes.

(1) Diam. (ins.)	(2) Approx. Circum. (ins.)	(3) Weight per ft. (lbs.)	(4) Breaking Load (lbs.)	(5) Safe Load (lbs.)	(6) Desirable Sheave Diam. (ins.)
1	3.14	1.58	29,000	5,800	72
⅞	2¾	1.20	23,600	4,720	66
¾	2⅜	0.89	17,000	3,400	54
⅝	2	0.62	12,000	2,400	48
½	1½	0.39	7,800	1,560	36
⅜	1⅛	0.22	4,800	960	27

The safe working load given in Column (5), it will be noted, is based on a factor of safety of five, and since four lifting ropes are standard English practice for the traction type of engine, this provides a combined factor of safety of twenty. U.S.A. Government practice is to consider the safe working load *per rope* as one-seventh of the breaking load, i.e., a factor of safety of seven. Jallings recommends that W = 1/6 T for goods and W = 1/8 T for passenger lifts where W = safe working load and T = the ultimate strength per rope.

Messrs. Bullivant & Co., Ltd., of Millwall, schedule the following data for their steel wire lift ropes (ungalvanized) :—

BREAKING STRESS AND WEIGHT OF STEEL WIRE ROPES.

Circum. (ins.)	Diam. (ins.)	Min. Sheave Diam. (ins.)	TYPE OF ROPE. 6×12 Breaking Stress.	6×12 Weight per foot.	6/19 Breaking Stress.	6/19 Weight per foot.	6/24 Breaking Weight.	6/24 Weight per foot.
1½	15/32	9	11,400	0.25	13,400	0.36	12,800	0.33
1¾	9/16	10½	15,400	0.35	18,100	0.50	16,800	0.47
2	⅝	12	21,000	0.45	25,000	0.66	23,000	0.60
2¼	11/16	13½	26,500	0.60	31,000	0.84	28,000	0.78

The number of ropes to be used depends upon the total load to be lifted, the minimum diameter of sheave employed, the material selected, and the factor of safety employed. With the drum type of machine it was almost universal practice to use two cables in order to keep the width of the drum face within reasonable limits, but the modern traction machine imposes no such restriction A larger number of cables of comparatively small diameter are used therefore, and this is found to be very convenient, since smaller sheaves may, of course, be employed, the advantage being an additional argument in favour of the traction type machine. English makers appear, almost universally, to employ four lifting ropes for traction machines, whereas the standard American practice is six. This divergence of practice is possibly due to the fact that American lift engineers favour the Swedish iron rope, which has a lower breaking load for equal diameter, and therefore, for a given load and rope diameter, a larger number of ropes is required.

It is difficult to give any really reliable data which will be useful as a guide to the reasonable life to be expected from lift ropes, as it depends largely on service and also on the size of sheaves and lead of the ropes. Running on a schedule, as indicated in the first article of this series (*The Builder*, January 6), for nine hours per day, under favourable conditions, a three years' life could be very reasonably anticipated, and five years in all probability. On the other hand, to the present writer's knowledge, in one case the ropes had to be replaced in nine months, and in another case they have been running for eight years and show scarcely any signs of wear.

How far a rope may be allowed to deteriorate before renewal is a question that can only be satisfactorily determined by those who are experienced in the work. They should certainly be examined at frequent intervals, and many points have to be taken into consideration, such as :—

(*a*) The amount of wear on the individual wires.

(*b*) The number of broken wires.

(*c*) The distribution of the broken wires (*i.e.*, if distributed over the whole length or close together, thus causing local weakness).

(*d*) The extent to which corrosion is likely to have affected the interior wires.

(*e*) Excessive stretching. (The sign of an overloaded rope is excessive stretching.)

In any case, in arriving at a decision to renew immediately or to defer renewal, no consideration should be paid to the existence of the safety gear, which should be regarded purely as an appliance which will operate only if undetected flaws or weakness exist. For a thorough examination it is desirable, when possible, to take the strain off the ropes, and an endeavour should then be made slightly to untwist the strands so that a fair estimate can be made of the condition not only of the outer strands but of the inner strands also.

(*To be continued.*)

Essex Archæological Society.

This Society visited Colchester on Saturday last to inspect the excavations recently made in the quadrangle of the Keep of Colchester Castle, which have revealed the existence of important Roman foundations and vaults. Reference was made to a parchment in the possession of Colchester Town Council, and dated 1350, which stated that Colchester Castle was built upon the foundations of King Coel's Palace. This is not correct, but it was pointed out by Alderman Benham that it was possibly meant to imply that the Castle was built on the foundations of a building which was so ancient that the origin of it was unknown.

Further investigations have now revealed signs of a colonnade, and it is believed that the foundations of the Castle were those of the great Temple of Claudius, of which Tacitus wrote. It was formerly believed that the Castle was built on a Roman site, and that it was a Norman Castle built of Roman material. The latest discoveries apparently confirm the general idea as to the site.

THE WEEK IN PARLIAMENT.

WESTMINSTER, *Wednesday.*

Exchequer Grants for Housing.

Sir A. Mond informed Sir J. D. Rees that the amounts paid by his Department from Exchequer funds in subsidy or grants under the Housing Acts in the past two years were as follows:—Assisted housing schemes of local authorities and public utility societies (Housing, Town Planning, &c., Act, 1919), 1920-21, £525,000, 1921-22, £4,500,000; grants to persons erecting houses (Housing (Additional Powers) Act, 1919) 1920-21, £2,500,000, 1921-22, £4,500,000.

Types of Houses Approved.

Sir A. Mond, replying to Mr. Myers, said that the numbers of houses of different types included in the 165,586 houses for which tenders had been approved on schemes submitted by local authorities and public utility societies were as follows:—

Accommodation Provided.	*No. of Houses.*
Living room, scullery, and 2 bedrooms ..	3,092
Living room, scullery, and 3 bedrooms ..	61,454
Living room, scullery, and 4 bedrooms ..	331
Parlour, living room, scullery, and 2 bedrooms..	659
Parlour, living room, scullery, and 3 bedrooms..	94,691
Parlour, living room, scullery, and 4 bedrooms..	5,359
Total	165,586

Loss on State Houses.

Lieut.-Colonel W. Guinness asked the Minister of Health what would be the average annual loss per house to be defrayed out of imperial or local funds in the case of all houses built, or building, under the Housing Acts of 1919 and 1921, for which the figures were available.

Sir A. Mond said that the best estimate he had been able to make from contract figures indicated that the average annual loss would be approximately £59 per house, but he was hoping that recent falls in cost might reduce this average.

Average Cost of Houses.

Mr. Trevelyan Thomson asked the actual cost of all houses which had been built and paid for to date by local authorities under the Government's housing schemes, showing the total number paid for and the average cost of each.

Sir A. Mond said that the houses already completed for the most part formed part of contracts which had not yet been finished. Special returns from local authorities of capital expenditure on 27,000 houses indicated an average cost of £1,087 per house, all included.

The Need for Houses.

Mr. Trevelyan Thomson asked the Minister of Health if he was corectly reported in the public press of March 28 as stating that the policy of the Government was that, until private enterprise could build workmen's houses to be let at an economic rent, married people and their families must be content to live in one room and that newly-married couples must follow the custom of the Chinese and other Eastern nations and continue to live with their parents until such times as unaided private enterprise could provide them with homes of their own.

Sir A. Mond said that he did not make the statement contained in the question, nor was he aware that he was ever reported in any paper as making it. In the course of a long interview with a representative of what he had previously regarded as a responsible journal, he humorously ventured the remark that newly-married people would be so happy that they could enjoy living even in two rooms. Some conversation took place as to whether the practice of newly-married people living separately was not comparatively modern, and as to the custom in the older civilisations of the East. He was much surprised that the hon. member should apparently regard these observations as a serious statement of policy, which, as he would have thought would have been obvious to any intelligent reader of the interview, were not to be regarded in such a manner.

No Rationing of Houses.

Mr. Malone asked the Minister of Health whether, in view of the overcrowding in the slum areas of London and the empty and scantily occupied houses in Mayfair, Belgravia, and elsewhere in the West-End, he would introduce measures to ration the housing accommodation until such time as the Government was in a position to provide adequate houses.

Sir A. Mond replied that he did not think that the proposal was a practicable one.

Unfit Houses.

Sir A. Mond informed Mr. Malone that the surveys made by local authorities in 1919 indicated that the population in unfit houses and houses in unhealthy areas was about 3.7 per cent. of the total. Pending receipt of comparable figures as a result of the census of 1921, he could make no statement as to the present position.

Rent Restriction Act.

Colonel Newman asked the Minister of Health whether he was aware of the public anxiety with regard to the approaching termination of the Rent Restriction Act; and had he been able to impress on the Government the necessity of placing on the statute book legislation on somewhat similar lines to that of the Town Tenants (Ireland) Act.

Sir A. Mond pointed out that the Increase of Rent and Mortgage Interest (Restrictions) Act did not expire until June, 1923. It was not proposed to introduce legislation on the lines suggested in the latter part of the question.

Stones for War Graves.

Mr. Hancock asked the Secretary of State for War whether he was aware of the great difficulty of masons in the Northern and Midland parts of the kingdom in tendering for the erection of headstones in French and Belgian cemeteries owing to the stipulation that it must be Portland stone; and, seeing that there was stone of excellent quality in other parts of the kingdom and that the interred soldiers came from all parts of the kingdom, would he give all contractors an equal chance by withdrawing the stipulation?

Sir L. Worthington Evans said that, in inviting tenders for headstones, no stipulation was made by the Commission that the stone must only be Portland stone. The Commission was at all times prepared to consider tenders in such other stone as the contractor might choose to tender for, and was guided in its selection solely by considerations of quality and price. As a matter of fact, other British stone had been used.

Timber Stocks.

Mr. Charles Percy asked the Minister of Health what stocks of sawn wood or timber trees his Department now held intended for building purposes; their original cost and present value; whether any part of such stocks were at present lying in the Forth, near Grangemouth; if so, when was it purchased and at what cost; and what was its present value.

Sir A. Mond said that his Department now held no stocks of timber. Stocks equivalent to 3,400 standards, which were stored at Grangemouth, were taken over by the Department of Building Materials Supply from the Board of Trade (Timber Supply Department) in September, 1919, at a price of £84,300. The whole of these stocks had been sold to local authorities and others on various dates, and no other stocks had been purchased.

HOUSING AND TOWN-PLANNING NOTES.

Local Bonds for Housing.

By a Treasury Minute dated March 24 the interest on Scottish Local Bonds for Housing issued on and after the first day of April, 1922, has now been fixed at 5 per cent., in place of 6 per cent. If in the case of a particular issue the local authority satisfy the Scottish Board of Health that a different rate of interest can properly be fixed, the Treasury will consider each such case on its merits.

Town Planning at Hull.

Mr. C. H. Eyles, F.S.I. (Ministry of Health), held an inquiry at the Guildhall, Hull, last week, into an application by the Hull Corporation for approval of the North-East Hull and Sutton town-planning scheme, in which lands partly in the rural district area of Sculcoates are affected. Mr. Hopkins, solicitor, represented the Hull Corporation, and explained that this was the first of the Town-Planning schemes of Hull. It dated from 1912, and its object was to develop the land lying between Hull and Sutton. It was proposed that a joint committee of Hull and Sculcoates should be the authority under the scheme. The forming of four main roads was contemplated, and it was proposed that the cost of making these roads should be recovered from owners of adjoining lands, under safeguards suggested in the interest of the owners.

Glasgow Housing Conditions.

At a meeting of the Glasgow Corporation last week, Mr. Morton moved the minutes of the Housing and Town Improvement Committee approving of a recommendation from the Joint Sub-Committee on Slum Areas that the time has arrived when action should be taken to deal with the slums and that a beginning be made by the erection of two and three apartment houses, with bathroom and scullery, the tenants from a slum to be demolished in the neighbourhood to have the opportunity of occupying the new houses. Mr. Morton added that they proposed to build about 150 houses.

Mr. James Stewart moved that the proposed houses be of three apartments, but on a vote being taken Mr. Morton's motion was carried.

Bristol Housing.

The Director General of Housing has authorised the Bristol City Council to invite tenders for a limited number of additional houses on the condition that the tenders approximate to the prices obtained in other districts paying the same wage rate as Bristol. The average prices at which contracts were let with the approval of the Ministry during January and February, including drains, etc., were, for a house containing parlour, living room and three bedrooms:—January, £544; February, £523; lowest price accepted to date, £426. For a house with a living room and three bedrooms the prices were:—January, £493; February, £478; lowest price accepted, £388.

In December the Bristol Council entered into contracts for the erection of parlour type houses at £620, and non-parlour at £560, including drains, etc. The total number of houses for which the Council has contracted to date is 1,099, and of this number 884 are completed and occupied, in addition to 141 temporary dwellings.

Aberdare Housing Scheme.

A Government inquiry is to be made into the cost of the Aberdare housing scheme, Mr. C. B. Stanton, M.P. having discussed the matter with Sir A. Mond. Only twenty-three houses have been erected in two years, but the cost of each has been nearly £2,000. Local Ratepayers' Associations and the Trades and Labour Council have asked for an inquiry.

THE BUILDING TRADE.

ARCHITECTS AND THE SPECULATIVE BUILDER: PAST, PRESENT, AND FUTURE.

BY WILFRID TRAVERS, F.R.I.B.A.

THE recent articles by Mr. H. R. Selley and Mr. Manning Robertson, A.R.I.B.A., on the immediate future of housing are of particular interest in that the two authors, the one describing himself as "one of the much-maligned speculative builders" and the other by his signature an architect, both call for some joint action by architects and speculative builders.

Mr. Selley writes: "Let the private architects and builders get together, put the 12 (3) scheme of the Housing Act into operation in its true spirit, and then direct their attention to the Small Dwellings Acquisition Act, by which intending purchasers can find the necessary finance . . . ." whilst Mr. Manning Robertson summarises his thesis in the following words: "Whilst some hold that an architect-builder coalition should be arranged on the basis of an agreed lump-sum per house, others may prefer the official issue of 'type plans' by the architectural profession . . . but so long as the end is secured it does not really matter which course is adopted, or if it be a different scheme altogether."

In the following remarks it is only proposed to deal with the first proposal put forward by Mr. Manning Robertson, and although his words are quoted it must be noticed that he does not necessarily adopt the idea mooted as his own. Both gentlemen, however, seem to assume that the reason why this "getting together" did not take place before housing became a plank in any Government programme, or even before the ill-fated proceedings of 1909–10, was that the architectural profession as a whole thought housing work beneath its dignity.

In the interests of the public, who will, as always, eventually have to pay in one way or another, it is desirable that some further consideration should be given to the real differences between the functions and attributes of the architect and those of the speculative builder, because it is submitted that these differences are the real cause of the lack of co-operation between architects and speculative builders in pre-war housing.

Mr. Selley in his opening paragraphs gives as good a description of the procedure and intentions of the speculative builder as could be found anywhere, and finally embodies the whole in six words, "the main business was to sell." The mass production of an article to sell is, as everyone will admit, a very useful and necessary function, but neither the manufacturer nor the merchant can pretend that the article so produced is necessarily and always the best possible in conception or workmanship. To quote Mr. Selley again: "Sales came to the man who could attract the public"; in other walks of life the makers of certain pills, soaps, and other much-used articles have attracted the public, their names have even become household words, and they have made fortunes—but no one would suggest that the peculiar merit which brought the fortune lay necessarily in the intrinsic virtue of the article which attracted.

The architect, on the other hand, is not merely a producer of attractive plans or elevations, or a purveyor of idealised houses; he has very definite functions in the supervision of the work and in maintaining the standard of quality both in materials and workmanship in the buildings for which he accepts responsibility. The price of 4½d. per ft. cube mentioned by Mr. Selley as leaving no margin for "architects' fees or costly design" also left no margin for such a standard of work as the architect would call for, as is witnessed by the gaping joints in the doors and the shrunken windows, &c., in many of the pre-war artisan houses, and in the coalition referred to by Mr. Robertson or in the operation of the 12 (3) scheme under a joint responsibility either the speculative builder would have to accept a higher standard than has normally been his wont or the architect must sink those traditions of his calling which have placed our profession in the position it occupies.

It is by no means suggested that the speculative house-builder's work is or was necessarily inferior, as such a charge would be far from fair, but there is in all lines of human activity a cleavage between the craftsman or professional man, who for the sake of the work and his credit's sake gives of his best, and the man whose instincts and objects are purely commercial. Among the large class of speculative builders there are and always were men who took a pride in their work in the truest sense; unfortunately, however, there were and are many others. Also, there is another factor: human nature being what it is, if the architect's interest becomes purely the commercial one of building to sell, he may well, perhaps unconsciously, lose his interest in securing the best work for its own sake and, little by little, accepting something here and something there not quite so good, and earn for his work the prefix "jerry," which was formerly the distinction of the baser work of the speculative builder.

At this point it would be as well to emphasise the fact that in speaking of the "best work," there is no intention to suggest that the standard of quality should not bear its due relation to the purpose of the building. The joinery for the Council Chamber of the County Hall must necessarily be on a different plane from that of the artisan's dwelling, but each should be of the best "of its respective kind," of sound material and workmanship, even if of a different grade of finish, and without putting forward socialistic ideas it is permissible to hold that to offer the councillor the best that money (out of the rates) can buy and to provide for the ratepayer (either to live in or as security for his money) the cheapest that can be bought irrespective of its quality is a somewhat anomalous proceeding.

Reference has been made to the fact that the houses are security for money advanced, whether out of the rates or from the taxes matters not, and in this aspect the question of quality has the gravest importance. If the public purse is to be drawn upon to encourage and assist (Mr. Selley's phrase) the speculative builder, surely the security requires the keenest scrutiny. Even if the loans are to be made under the Small Dwellings Acquisition Act to a third party (the purchaser) the money will still, in actual fact, be passing from the public to the builder.

The architectural profession is then—if it executes its proper functions—in the position of being the guardian of the public funds, and up to the present it has undoubtedly secured a better standard of work in those schemes which have been under architectural control than had been known before in artisans' dwellings. There is, however, a danger lest, led away by a well-intentioned desire to help housing work on, the profession, or some part of it, may forgo its position of control and by becoming a partner with the builder cease to be the guardian and become a participator in the profits.

It is common knowledge that, in the days when the speculative builder supplied the demand for houses, in those cases when he built to retain he erected property of a superior quality to his normal output for sale, because the factor of maintenance entered into his calculations in the one case, whereas in the other he left that burden to the purchaser. The results of this dual policy can be seen in the environs of every large town, and have only to be seen to be appreciated. The difference may be expressed as one between initial outlay and eventual cost, and if the houses are to remain the property of the public the eventual cost (*i.e.*, including the annual charges for maintenance) should be kept so far as possible at a minimum, even if the initial outlay is slightly increased. The same applies to the proposal that the houses should be sold, if the financing of the sales is to be under the Act referred to above, because the public will still be finding the money.

It can hardly be suggested, however, that the State or the municipalities should demand the method of building to two standards, and if such were the case the municipal house would soon achieve such a repute that purchasers would be undiscoverable.

In conclusion, the profession should be very wary of any proposal which would remove it from its position of master, and make it a partner. Mr. Manning Robertson says, only too truly, that "if it is politically desirable to lower the standard, lowered it will be." Unfortunately, the occasion has apparently arisen, and the Ministry, with an architect as Director of Housing, is already (as the columns of *The Builder* have shown) prepared to accept a lower standard than in the days when a contractor occupied that high position, or even than the better house-builders gave us in the past. From all the portents the powers that be are prepared to allow work of such a nature that it even contravenes the standards of hygienic building laid down by the model by-laws. Unfortunately also, many local authorities, acting under pressure from the Ministry and pressure from constituents (some of whom are interested in securing a share of the encouragement and assistance offered for building houses) are willing to accept work of doubtful quality. It is, therefore, the more incumbent on architects to maintain their freedom, to insist upon that standard of work for which the profession has stood in the past, and to keep out of entangling partnerships which may prejudice their position.

Building of Salonica.

In connection with the schemes for the rebuilding of Salonica the Consul-General at that town has been approached by a constructional engineer in Salonica, who desires to be placed in communication with United Kingdom firms dealing in building materials from whom he could obtain quotations for the undermentioned requirements. Where possible a catalogue and illustrated price list should be sent, and the prices quoted should be c.i.f. Salonica:—Girders for construction of frame and roofing; roofing (must be light and strong; corrugated asbestos cement sheeting is apparently required to resist local climatic conditions); collar lights (with frames complete; estimated quantity required twenty sets, size 2 metres by 1 metre); window frames (metal, required for high level, 50 per cent. must open, to be hung in centre or at top); wire grilles (quantity about 56 sets, size 3 metres by 2 metres); shutters (iron for shop fronts; type closing upon themselves by flowing from right to left, or *vice versa*; quantity required, about 88 sets, size 3½ metres high by 3 metres wide); central heating (for a dwelling-house of 12 rooms, 5 on ground floor and 7 on first floor). The name and address of the engineer referred to may be obtained by United Kingdom manufacturers and exporters interested on application to the Departments of Overseas Trade (35, Old Queen-street, S.W. 1); Ref.—6893/FE/SC (2).

A Building Guild Tender.

At the meeting of Barrow Town Countil last week it was reported that the Housing Commissioner had declined to accept the Building Guild's tender for fifty houses as it was not low enough. It was agreed to press for permission to build, as housing conditions were shocking.

SHORT TOW AS A SUBSTITUTE FOR OX-HAIR IN PLASTER.

A NOTE FROM THE BUILDING RESEARCH BOARD.

Short tow is a by-product in the manufacture of flax and consists of the residue of fibre left after scutching. Although it is capable of being spun into low-grade yarn the cost of spinning is prohibitive and, so far, flax manufacturers have been forced to consider it waste material.

Following a letter from a Government department stating that this short tow had been very successfully employed as a binding agent in plaster, and suggesting that its use in this capacity might be extended to the mutual benefit of the building and flax-making industries, some tests on its strength as reinforcement were made at the Building Research Station.

As a preliminary, four 12 in. by 9 in. by 3 in. blocks were made up with 2 parts of clean sand to 1 of chalk lime, slaked to a putty two or three days before mixing. Two of these were reinforced with hair prepared in the usual manner and two with tow picked apart by hand. The plasterers' working rule of adding just sufficient binder to cause the mortar to hang from the trowel was adhered to when adding the tow and hair for the first two blocks made. The amount required in each case was found to be approximately 1 oz., *i.e.*, 1 lb. per cubic feet of mortar; equal weights of tow and hair were compared therefore in all subsequent tests.

The blocks were broken as beams 47 days after moulding. One of those containing tow gave a very poor result, but it was noticed that in this block the fibre had not been evenly distributed; the other tow specimen gave a result comparable with those obtained for hair plaster.

On the receipt of a further sample of short tow, which had the appearance of being inferior to that used in the first tests, 18 in. by 6 in. by 3 in. plaster blocks were made with the lime and sand content as before, 1 oz. of binder being used in each specimen. These were broken as beams after 10 weeks' seasoning, and the transverse modulus of rupture obtained for the material in each case:—

Block.	Binder.	Sectional Area.	Span.	Breaking Load. lbs.	Transverse Modulus of Rupture. lbs. per sq. inch.
E.	Hair	6 in. × 2.9 in.	12 in.	26	30.2
F.	Hair	6 in. × 2.9 in.	8 in.	40.25	30.4
G.	Tow	6 in. × 3.0 in.	10 in.	36	31.9
H.	Tow	6 in. × 3.05 in.	10 in.	45	38.2

With such an irregular material as lime plaster a large number of tests would have to be made before any general result could be stated, but it would seem that short tow is at least comparable with ox-hair as a reinforcement, and it is stated to be considerably cheaper, being obtainable from the British flax-makers at from 2d. to 3d. per lb. The individual fibres are not so strong as those of hair, and there is a fair quantity of "woody" matter mixed up with them. The fibre hangs together in clumps, but these can be separated out by an operation which is clean and rapid compared with the preparation of hair.

As is well known, similar substitutes are commonly used in other parts of the world—chopped jute in India, manila fibre and torn wood fibre in the United States of America.

London Builders' Foremen's Association.

The first annual general meeting of this Association, which has been formed in conjunction with and allied to the London Master Builders' and Allied Industries Association, was held at Kingsway Hall on Thursday last week. A large number of members was present and officers and committee were elected for the ensuing year. The address of the Secretary is 48, Bedford-square, W.C.1.

NEW BUILDINGS IN LONDON.

East Central.—The extensive reconstruction of Blackfriars Central Buildings, Victoria Embankment, is now in an advanced stage. The premises were previously De Keyser's Hotel. Decorating work is now proceeding in various parts of the interior, and a new front is being put in on the ground floor. The premises have been acquired by Messrs. Lever Bros., Ltd., 37, Upper Thames-street, E.C. 4, who are already in possession of the completed portions. The main contractors are Messrs. Joseph Dovey & Co., Ltd., of Brentford.

Westminster.—The business premises occupying 168, Victoria-street are being reconstructed as a modern shop and showrooms by Messrs. Arnold & Sons, 10, Gray's Inn-road, W.C. 1.

Isleworth.—The Community of Gumley House, Isleworth, are having extensive additions made to the College buildings. A new block is being erected, including classrooms, art rooms, laboratory, and a large assembly hall with a proscenium and stage, cloak-room and offices. The main buildings are being erected with stock and red brick facings and artificial stone dressings. All the flats are in reinforced concrete covered with asphalte, and the main roofs are covered with Berkshire tiles. The floors are pitch pine throughout. The whole scheme is costing £19,000. The general contractor is Mr. W. Lacey, Staines-road, Hounslow.

Hounslow.—The extensions to the Hounslow Hospital have just been completed and opened. These comprise additions to the men's and women's wards to double their original dimensions. The walls are faced with stock bricks to match the existing buildings. The roofs are constructed on the "big span" system, and covered with asphalte; and the floors are pitch pine throughout. The work has cost £3,500. The general contractor was Mr. W. Lacey, Staines-road, Hounslow.

Kilburn.—A large hall attached to the Catholic Church, Quex-road has been completed and opened. Owing to the site being of clay the whole of the foundations have been constructed of reinforced concrete blocks made on the site. The main front entrance with ground and first-floor windows, pediment, and copings are of Portland stone. The hall has a large stage and proscenium, with dressing and billiard rooms and offices. The floors are constructed of reinforced concrete, and teak doors are fitted to all the minor rooms. Fire-escape stairs are provided on the side of the building. The general contractor is Mr. W. Lacey, Staines-road, Hounslow.

North Kensington.—A portion of the old property has been demolished on the corner of Kenley-street and Sirdar-road, and on this site a block of working-class flats is now in course of erection. The block, comprising three floors of self-contained flats and one shop, will have a frontage to Kenley-street of about 76 ft. and a return of 100 ft. The plans, prepared by the architect, Mr. Saunders, provide for brick construction with an asphalte roof, which has been let to a sub-contractor. The builders are Messrs. Wheeler Bros., of 120, Church-street, W. 8. The steel-casements are supplied by Messrs. Humphries, Jackson & Ambler, Ltd., of 34, Norfolk-street, W.C.2. The freize and top cornice, etc., are by Messrs. Stuart's Granolithic Co., Ltd., of 63, Lincoln's Inn Fields, W.C.1. Messrs. Wheeler Bros. are also engaged upon the demolition of a block of dwelling houses in Bomore-road, in order to provide access into Tobin-street. It is understood that other building operations are contemplated on adjoining sites in the near future, but no further details are available at the moment.

Shepherd's Bush.—The reconstruction and extension of Messrs. G. P. Murfitt's drapery stores at 44-49, Norland-road is now proceeding. The new work consists of the addition of a new shop occupying No. 43, with a frontage of 32 ft., the reconstruction of the first floor of the entire premises as modern show rooms, and the provision of one double and two single arcades on the ground floor. The second and third floors will be fitted and used as staff rooms, etc. The architects are Messrs. T. Jay Evans & Son, of 34, High Holborn, W.C.1. The main contract is being carried out by Messrs. Geo. Parker & Sons, Ltd., of 124, Sumner-road, Peckham, S.E.15. Various sub-contracts have been allotted as follows:—Steelwork: Messrs. Lindsay's Paddington Ironworks, Ltd., of 15, North Wharf, W.2; pavement and floor lights: Messrs. Luxfer Prism Syndicate, Ltd., of 16, Hill-street, Finsbury, E.C.2; brasswork for the arcades: Messrs. Samuel Haskins & Bros., Ltd., of 20, Old-street, E.C.1. Heating will be supplied from gas radiators installed by the builders.

Brockley.—A new shop with living accommodation above is now in course of erection in Foxwell-street. The builders are Messrs. G. Poulton & Sons, of 11, Westbrook-road, Thornton Heath, who have prepared their own plans, showing a building 24 ft. sq. with a back addition of 6 ft. 9 in. by 12 ft. 6 in. Brick and steel construction will be employed, and the structure is to have a slate roof hipped from the four corners. Sub-contracts for steelwork, plastering, etc., have yet to be decided.

Lewisham.—The premises occupying No. 296, High-road, are now being reconstructed as new show rooms for Mr. J. Sainsbury, provision merchant. The new building, which is being erected in front of the firm's existing warehouse and depository, is to have a frontage of approximately 34 ft. and a depth of 50 ft. The plans, prepared by the architect, Mr. G. Hambling Fox, of 113, Fenchurch-street, E.C.3, show a building of three floors constructed in brick and steelwork with an asphalte roof. The builders are Messrs. Sawyer & Son, of Roxley-road, S.E.13. The steelwork will be supplied by Messrs. Measures Bros. (1911), Ltd., of 105, Southwark-street, S.E.1. It is understood that the premises adjoining, also owned by Mr. Sainsbury, are to be converted for his own use on the expiration of the leases.

Lee Green.—Reconstruction is proceeding at the premises at No. 1, Eltham-road. The work consists of the conversion of the existing motor engineers' shop into a new branch for the London County Westminster & Parr's Bank, Ltd. The plans drawn up by the architect, Mr. E. A. Stone, F.S.I., of 131, Regent-street, W.1, provide for steel and stone construction, comprising strong room, bank manager's office, and the usual bank fittings. The main contract has been secured by Messrs. Higgs & Hill, Ltd., of Crown Works, South Lambeth-road, S.W.8. The steelwork is being supplied by Messrs. Redpath, Brown & Co., Ltd., of 3, Laurence Pountney-hill, E.C.4. The stonework for the frontage is by Messrs. South Western Stone Co., Ltd., of 110A, New-road, Battersea, S.W.8. The asphalte used in the construction of the strong room is by Messrs. J. A. Lawford & Co., of Bow Bridge, E.15.

Stratford.—Following the fire in August last, which destroyed the saw mills of Messrs. J. Gliksten & Sons, Ltd., in Carpenters-road, the re-building of the premises is now proceeding. The main contract has been secured by Messrs. J. and J. Dean, builders and contractors, of Knott's Green-road, Leyton, E.10, who are working to the plans prepared by the architect, Mr. S. Clifford Tee, F.S.I., of 50, Moorgate-street, E.C.2. Building operations

were commenced early this year on the original site of some 13 acres, and the new work involves the erection of a number of brick and steel buildings, timber storage sheds, etc. The fireproof roof over the switch-board room is being supplied by Messrs. Kleine Patent Flooring Syndicate, Ltd., of 133-136, High Holborn, W.C.1. The steelwork for the large timber sheds is being supplied and fixed by Messrs. Boulton & Paul, Ltd., of Norwich. The other main sub-contracts settled are:—roof-glazing: Messrs. W. H. Heywood & Co., of 39, Victoria-street, S.W.1; asbestos sheeting for roofs: Messrs. British Fibrocement Works, Ltd., of Erith; various steelwork: Messrs. The Aston Construction Co., Ltd., of Eagle Wharf-road, Hoxton, N.1; steel sashes: Messrs. John Williams & Sons, Ltd., of Cardiff.

WORKMEN'S COMPENSATION:

(WAR ADDITIONS) ACTS.

It may be noted that the Workmen's Compensation (War Additions) Acts, 1917 and 1919, which when passed were to continue in force "during the continuance of the present war and for a period of six months thereafter," have been continued by the Expiring Laws Continuance Act, 1921, until December 31 of this year. These Acts granted an addition to the weekly payments payable to workmen during total incapacity, whether such incapacity arose before or after the commencement of the Acts and whether the payments by way of compensation were made under the early Acts of 1897 and 1900 or under the Act now in force, namely, that of 1906, and there are provisions rendering these additional sums payable notwithstanding that the liability to make weekly payments under these Acts has been redeemed subsequently to the commencement of these Acts. The Act of 1917 which contained this latter provision was very obscurely worded, but the intention appears to have been to treat the war increase as something outside the ordinary weekly payments and not subject to redemption, as it was only temporary in its nature. The war addition under the latest of the two War Additions Acts is a sum "equal to three-quarters of the amount of the weekly payment."

SCOPE OF EMPLOYMENT.

In our issue for May 27, 1921, we noted three cases decided in the House of Lords to the effect that if a workman acts in contravention of either a statutory regulation or even a prohibition laid upon him by his employer, then if he meets with an accident due to this disobedience to orders he will be held disentitled to compensation, the accident not having arisen out of or in the course of the employment. Of course, it must be shown that the statutory regulation was brought to his notice, and in the case of private prohibition, greater care must be taken in defining the exact prohibition and bringing it to the notice of the workman.

How narrowly these prohibitions, statutory or otherwise, will be interpreted, is shown by two cases recently decided in the House of Lords, in the case Costello *v.* Robert Addie & Sons' Collieries, Ltd., and Coltness Iron Co. *v.* Baillie. In these cases the prohibition was the same, a statutory order, The Explosives in Coal Mines Order, September 1, 1913, "If a shot misses fire the person firing the shot shall not approach or allow anyone to approach the shot-hole until an interval has elapsed of not less than an hour."

In the first of these two cases the appellant and another man were engaged in firing shots 3 ft. apart; the other man's shot went off all right, but the appellant's did not explode, and after waiting forty minutes he approached his shot, and as he approached it went off and injured his leg. The House of Lords, affirming the decision of the second division of the Scotch Court of Session, held the man disentitled to compensation.

In the second case two shots were arranged a distance of 20 ft. apart, one by a man called Muncie, the other by the respondent and his two sons. Muncie intimated that he was ready to fire his shot, and one of the respondent's sons applied the light to the shot for which he had bored the hole, but the respondent had put in the explosives, done the packing, and arranged the fuse. The party then retired and Muncie's shot exploded, but the other did not, and the respondent approached without waiting for the prescribed period, and the shot exploded and injured him permanently. The House of Lords in this case, also affirming the Scotch Court, held that as the prohibition was laid on the "firer" of the shot alone, it could not be extended to other persons, and that as the respondent was not the firer of the shot, but his son fired it, he was not disentitled to compensation.

It appears to have been argued that a shot which misses fire may never have been fired, and in this connection it may be noted that the House of Lords on this point agreed with a Scotch decision, Smith *v.* Archibald Russell, Ltd. (1921, 58 S.L. S.L.R. 284), that a shot misses fire when it does not explode in the usual time, and "firing" a shot means such application of the naked light to the fuse as in an ordinary situation will cause the fuse to light.

NATIONAL BUILDING GUILD.

Some interesting statements regarding the progress of the National Building Guild were made at a meeting of building operatives held at Cardiff last week. Mr. Harry Frankland, Chairman of the Board of Directors of the Guild, spoke of its progress during the past two years. He said there were 140 Guild committees existing in the country, and 70 of these were actually working and held contracts totalling nearly £3,000,000. The Directors had come to a decision that day which would give a great impetus to the movement in South Wales, where he believed the building industry would be captured by the Guild in less than two years' time.

Mr. S. G. Hobson, General Secretary of the Guild, said that the movement had shown the trade unions that there was a better way of fighting, and a better way of economic advance, than merely by ordinary bargaining inside the wage system. The employers had prophesied that the Guild would not last long because of its lack of technical ability, but there had been no lack of technical ability. On the contrary, Government surveyors, architects, and surveyors universally admitted that the work of the Guild was superior to anything previously done under capitalism or by direct employment. He (Mr. Hobson) was looking forward to the time when it would not be necessary for them to tender, a system which, he declared, was altogether wrong.

Mr. John Winning, of Glasgow, and Mr. Albert Hull, of London, members of the Board of Directors, both reported upon the progress made by the Guild in their respective districts, and upon the character of the work carried out.

Mr. W. T. Lloyd, of Cardiff, stated that over £400,000 worth of work had been completed by the Guild in South Wales in a year and nine months. They now possessed £12,000 worth of plant, and had paid out over £300,000 in continuous wages, while during the past three weeks they had tendered for over £100,000 of work.

At the conclusion of the meeting, Mr. Frankland appealed for loans, free of interest, from members of the building industry. He said work was being offered which they could not undertake through lack of capital. Strikes and lock-outs were destructive, and if the Guild could have had one-fifth of the amount expended by one organisation in a recent strike it could employ 15,000 additional operatives.

RAILWAY CONTRACTS: "OWNER'S RISK."

We must draw attention to a decision of the House of Lords recently in the case H. C. Smith, Ltd., *v.* Great Western Railway Co. The case is stated to have been a test case to determine the liability of the Company where goods carried under an "owner's risk" note are not delivered. The plaintiffs (the appellants) had entered into a general contract with the Railway Company for the carriage of their goods at "owner's risk." The note was in the ordinary form, namely, that in consideration of the goods being carried at the lower rate the Company should be relieved from all liability for loss, damage, misconveyance, misdelivery, delay, or detention of or to such goods . . . except upon proof that such loss, damage, misconveyance, &c., arose from the wilful misconduct of the Company's servants. The appellants had delivered a parcel to a carman of the Company at Birmingham, and the parcel had reached Snow-hill Station, but after that nothing more had been heard of it, and the appellants had been unable to obtain from the Company any information except that it had not reached its destination, Wilton, and it was believed to have been lost.

At the trial in the county court the Company had called no evidence, submitting that there was no case for them to answer since no evidence of wilful misconduct had been given against them.

The House of Lords has held, affirming the decision of a divisional court and the Court of Appeal, that the effect of this clause was to throw upon the trader the burden of proving that the loss arose from the wilful misconduct of the Company itself or of its servants. The House of Lords recognised that this clause gave the trader no protection at all, as it was practically impossible for him to prove how the goods had been lost, such a fact being only discoverable (if at all) by the Railway Company. The House of Lords was asked to infer from the Company's unreadiness to give any information, either in correspondence or in the interrogatories that had been administered in the course of the proceedings that the goods had been lost from wilful misconduct, but the House was unable to assent to any such inference being drawn from the Company's conduct.

With this decision before them consignees will do well to consider whether the rebate they receive under owner's risk notes is sufficient to compensate them for having to run such great risks.

There is also another matter involved in the present decision: pilfering on railways is very rife, and if the companies themselves are protected in this manner under such contracts they have no incentive to discover the culprits and bring them to justice and thus to protect the public. We regret the adoption of the term "pilferage" to express an offence of such a serious nature as is stealing by persons in a position of trust, and possibly this offence would be less frequent if a more offensive title were given to it.

In this case there was no evidence whatever as to what had become of the goods, and the unfortunate effect of the decision is that the contract exempts the only persons who could ascertain that fact from any obligation to make inquiry. We may remind our readers, however, that it has been recently held by the Court of Appeal, in Neilson *v.* London and North-Western Railway Co. (*Weekly Notes*, November 12, 1921), that the Railway Company can only invoke the protection of the "owner's risk" note for the consequences of delay where it occurs in the course of the carriage of goods on the route contracted for, and that the note does not apply where delay occurs in the course of a deviation from that route (see *The Builder*, December 9, 1921). Although the same principle would no doubt apply in the case of a loss of the goods, the consignee would, however, find it impossible to prove that the loss occurred during the deviation.

THATCHED ROOFS.

Much of the charm of Devon is due to its picturesque thatched roofs. In the Home Counties there is an abundance of straw suitable for thatching, and a good deal of the picturesqueness of the south coast could easily be added to our rural districts if this form of roofing were more widely adopted. It has been estimated that by using thatch instead of tile or slate a saving of about £90 can be effected in the construction of a six-room cottage, and that reed made from combed wheatstraw will stand the ravages of weather for nearly a quarter of a century. Houses so covered are warm in winter and cool in summer, and now that one of the chief objections against this form of roof has been overcome by the possibility of rendering the reed fire-proof and vermin-proof, there would appear to be no reason why it should not become more popular in the surrounding country. Messrs. W. Isaac & Sons, of Braunton, Devon, are introducing a reed comber similar to that used in the south and west of England, which can be attached to an ordinary

The "Isaac" Reed Comber.

threshing machine, and at one operation will turn sheaves of wheat into unbroken, clean reed, suitable for thatching, and at the same time will finish the grain for the market. The comber, which is constructed as an independent unit, can be lifted on and off the threshing machine and be used as a thresher only, or as a thresher and reed comber combined, without any increase of horse-power. It will take stalks varying from 3 ft. 6 in. to 5 ft. 9 in., and at full speed will "comb" upwards of forty quarters of grain per day. Mr. E. J. Halsey, Rochford, Essex, has been appointed sole agent for the "Isaac" Reed Comber for the Eastern Counties.

Durham Surveyors' Association.

A meeting of this Association was held at the Shire Hall, Durham, recently, the President, Mr. Albert E. Brookes, County Engineer and Surveyor, in the chair.

Mr. J. W. Green, City Surveyor, read a paper on "Motor Haulage *v.* Horse Haulage," and the following took part in a discussion:—Messrs. E. L. Key (Stockton), G. Gregson (Durham), J. Routledge (Stanley), T. J. Trowdale (Annfield Plain), J. R. Lupton (Lanchester), C. W. Hall (Felling), W. J. Merrett (Durham), W. Symon (Durham County), G. Symon (Blaydon), M. Turnbull (Shildon), J. Mitchell (Stockton), T. Knox (Benfieldside), and the President.

RATES OF WAGES IN THE BUILDING TRADE.

The following are the rates of wages in the building trade in England and Wales. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
Aberdare	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Accrington	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Altrincham	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Ashton-under-Lyne	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Barnsley	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Barrow-in-Furness	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Barry	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Bath	1/7	1/7	1/7	1/7	1/7	1/7	1/7		1/2½	
Bedford	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Birkenhead	2/2	2/2	2/2	2/2	2/2	2/2	2/2		1/9½	
Birmingham	1/10	1/10	1/10	1/10	1/10	1/11	1/10		1/5	
Bishop Auckland	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Blackburn	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Blackpool	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Bolton	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Bournemouth	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Bradford	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Bridgwater	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½		1/0½	
Brighton	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Bristol	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Burnley	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Burton-on-Trent	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Bury	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Cambridge	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Cardiff	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Chatham	1/5	1/5	1/5	1/5	1/5	1/5	1/5		1/1	
Chelmsford	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Cheltenham	1/7	1/7	1/7	1/7	1/7	1/7	1/7		1/2½	
Chester	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Chesterfield	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Colchester	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Coventry	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Crewe	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Darlington	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Derby	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Doncaster	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Dudley	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Durham	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
East Glam. and Mon. Valleys	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Exeter	1/6	1/6	1/6	1/6	1/6	1/6	1/5		1/1½	
Folkestone	1/5	1/5	1/5	1/5	1/5	1/5	1/5		1/1	
Gloucester	1/7	1/7	1/7	1/7	1/7	1/7	1/6		1/2½	
Grantham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Grays	1/10	1/10	1/10	1/10	1/10	1/10½	1/9		1/5	
Grimsby	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Great Yarmouth	1/5	1/5	1/5	1/5	1/5	1/5	1/5		1/1	
Guildford	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Halifax	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Harrogate	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Hartlepools	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Hastings	1/5	1/5	1/5	1/5	1/5	1/5	1/5		1/1	
Hereford	1/7	1/7	1/7	1/7	1/7	1/7	1/6		1/2½	
Huddersfield	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Hull	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Ipswich	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Lancaster	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Leamington Spa	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Leeds	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Leicester	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Lichfield	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Lincoln	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Liverpool	2/2	2/2	2/2	2/2	2/2	2/2	2/2		1/9½	
Llanelly	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
London	1/10	1/10	1/10	1/10	1/10	1/10½	1/9		1/5	
Loughborough	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Luton	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Maidstone	1/5	1/5	1/5	1/5	1/5	1/5	1/5		1/1	
Manchester	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Mansfield	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Merthyr Tydfil	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Middlesbrough	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Newcastle-on-Tyne	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Newport, Mon.	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Northampton	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Norwich	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Nottingham	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Oakham	1/7	1/7	1/7	1/7	1/7	1/7	1/7		1/2½	
Oldham	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Oxford	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Plymouth	1/8	1/8	1/8	1/8	1/8	1/8	1/7		1/3½	
Pontypridd	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Portsmouth	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Preston	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Reading	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Rochdale	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Rochester	1/5	1/5	1/5	1/5	1/5	1/5	1/5		1/1	
Rugby	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
St. Albans	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
St. Helen's	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Scarborough	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Sheffield	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Shrewsbury	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Southampton	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Southend-on-Sea	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Southport	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
South Shields	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Stockport	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Stockton-on-Tees	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Stoke-on-Trent	1/10	1/10	1/10	1/10	1/10	1/11	1/10		1/5	
Stroud	1/6	1/6	1/6	1/6	1/6	1/6	1/5½		1/1½	
Sunderland	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Swansea	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Swindon	1/7	1/7	1/7	1/7	1/7	1/7	1/6		1/2½	
Taunton	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Torquay	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Tunbridge Wells	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Wakefield	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Walsall	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
Warrington	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
West Bromwich	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Wigan	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Windsor	1/6	1/6	1/6	1/6	1/6	1/6	1/6		1/1½	
Wolverhampton	1/10	1/10	1/10	1/10	1/10	1/10	1/10		1/5	
Worcester	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	
York	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/3½	

(For rates of wages in the Building Trade in Scotland, see page 580.)

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained.

BUILDING AND PAINTING.

APRIL 15.—**Ashington.**—PREMISES.—Erection of new branch premises at Seaton Hirst, Ashington, for the Ashington Industrial Co-operative Society, Ltd. Messrs. Harrison, Ash & Blythe, architects, 22, Ellison-place, Newcastle-on-Tyne.

APRIL 15.—**Carlisle.**—HOUSE.—For erecting a dwelling house in Warwick-road. Mr. Robert Batey, 39, Warwick-road.

APRIL 15.—**Glasgow.**—JOBBING WORKS.—For jobbing building works for one year, for the T.C. Office of Public Works, City Chambers, 64, Cochrane-street, Glasgow.

APRIL 15.—**Pontypool.**—VESTRY.—Erection of new vestry and laying of chancel floor at St. James's Church. The Vicarage, Clarence-street, Pontypool.

APRIL 16.—**Wrockwardine.**—RENOVATION.—Renovation of Primitive Methodist Church, Wrockwardine Wood. The Manse, Wrockwardine, Salop.

APRIL 18.—**Falmouth.**—PAINTING.—For external painting of All Saints' Church. Churchwardens.

APRIL 18.—**Hertford.**—LAVATORIES.—For the erection of public lavatories in the Wash, for the T.C. Borough Engineer, the Castle, Hertford.

APRIL 18.—**Hull.**—COTTAGES, &C.—Erection at Dunswell of (1) four cottages and (2) stores and piggeries (11 pairs), for the T.C. Mr. F. W. Bricknell, City Engineer, Guildhall, Hull.

APRIL 18.—**Molesey.**—BATHING STATION.—For the erection of a bathing station on the River Thames near Molesey Lock, for the U.D.C. Surveyor, Council Offices, East Molesey.

APRIL 18.—**Preston.**—ALTERATIONS.—For alterations to building at St. Paul's-road Store Yard, for the T.C. Borough Surveyor, Town Hall, Preston.

APRIL 18.—**Steyning.**—PAINTING.—Painting, &c., work at the Poor Law Institution and Children's Homes, Shoreham-by-Sea, for the Board of Guardians. Mr. Arthur Flowers, Clerk, Union Offices, Shoreham-by-Sea.

APRIL 19.—**Bournemouth.**—COTTAGES, &C.—Erection of eight pairs of cottages, piggeries, &c., at Muccleshell. Mr. A. L. Roberts, County Architect, The Castle, Winchester. Deposit £1 1s.

APRIL 19.—**Bradford.**—SHOPFITTING.—For the shopfitting and shop fronts, including all incidental builders' work in connection therewith, at Sunbridge-road, for the T.C. City Architect, Town Hall, Bradford.

APRIL 19.—**Deudron, Lancs.**—PAINTING.—For the painting of Deudron Church. Churchwardens, Deudron, Lancs.

APRIL 19.—**Glasgow.**—MASON WORK, &C.—Execution of jobbing mason work and plumber and gasfitter work, for the City Improvements Dept. Mr. James G. Ewan, 22, King-street, Glasgow.

APRIL 19. — **Sowerby Bridge.**—BUILDING.—Erection of a new Post Office at Sowerby Bridge, for the Commissioners of His Majesty's Office of Works. Contracts Branch, H.M.O.W., King Charles-street, London, S.W.1. Deposit £1 1s.

APRIL 19.—**Truro.**—LOCK GATES.—Construction of lock gates for flushing purposes, concrete piers, and other work, at Boscawen Bridge, for the T.C. Mr. F. A. Barnes, City Engineer, Municipal Buildings, Truro.

APRIL 19. — **Wolverhampton.** — ALTERATIONS.—For alterations and additions to the Town Hall, for the T.C. Mr. G. Green, Engineer, Town Hall, Wolverhampton. Deposit £2 2s.

APRIL 20.—**Blackpool.**—HOUSES.—For the erection of (*a*) 48 houses, (*b*) house drainage and fencing, for the T.C. Mr. E. D. Dennis, architect, 27, Clifton-street, Blackpool. Deposit 10s.

APRIL 20.—**Dundee.**—STAIRS, &C.—Construction of reinforced concrete floors and stairs at extension to offices, Dudhope-crescent-road Power Station, for the T.C. Mr. H. Richardson, F.R.S.E., Engineer, Electricity Department, Dundee.

APRIL 20.—**Orton.**—ALTERATIONS.—Alterations and additions to the "Fleece Inn," Orton, Westmorland. Mr. John F. Curwen, architect, Highgate, Kendal.

APRIL 21.—**Bristol.**—HOUSES.—Erection of thirty-one houses on the St. John's-lane Housing Site, Bedminster. Mr. Lessel S. McKenzie, City Engineer, 51, Prince-street, Bristol. Deposit £2 2s.

APRIL 21.—**Manchester.**—BOWLHOUSES.—Erection of bowlhouses at the Blackley and Iron-street (Miles Platting) Recreation Grounds, for the T.C. City Architect, Town Hall, Manchester. Deposit 10s. 6d. each.

APRIL 21.—**West Hartlepool.**—HALL.—Erection of a Church hall, Belle Vue, West Hartlepool, for the Belle Vue Congregational Church. Mr. C. F. Burton, F.S.A., George-street, West Hartlepool. Deposit £1 1s.

APRIL 22.—**Manchester.**—FENCING.—Supply and erection of cleft chestnut and post and wire fencing on the Small Holdings situated in Wilbraham-road, Fallowfield, and on the Highfield Estate, Levenshulme, for the T.C. City Surveyor's Office, Town Hall, Manchester. Deposit £1 1s. each.

APRIL 22.—**Manchester.**—PIGGERIES.—Erection of piggeries on the Small Holdings situated in Wilbraham-road, Fallowfield, and on the Highfield Estate, Levenshulme, for the T.C. City Surveyor's Office, Town Hall, Manchester. Deposit £1 1s. each.

APRIL 22.—**St. Anne's-on-the-Sea.**—PUBLIC CONVENIENCES.—For the erection of public conveniences, for the U.D.C. Surveyor, Town Hall, St. Anne's-on-the-Sea.

APRIL 24.—**Bingley.**—PAINTING.—External painting to two hostels and kitchen block at Bingley Training College, for the West Riding E.C. Education Department, County Hall, Wakefield.

APRIL 24.—**Sheffield.**—HOUSES.—Erection of 57 additional houses on the Stubbin Estate, Firth Park, for the T.C. Mr. F. E. P. Edwards, City Architect, Town Hall, Sheffield. Deposit £2.

*APRIL 26.—**Edmonton, N.18.**—PAINTING AND REPAIRS.—External painting and repairs of house and Fortescue Villas, Enfield. Mr. J. C. S. Mummery, architect, 34, Bloomsbury-square, W.C.1.

APRIL 26.—**London, N.**—CLEANING, PAINTING, REPAIRING.—Cleaning, painting and repairing work at the Northern Fever Hospital, Winchmore Hill, N.21, for the Metropolitan Asylums Board. Office of the Board, Embankment. E.C.4. Deposit £1.

APRIL 27.—**Leamington.**—REINFORCED CONCRETE.—Construction of reinforced concrete bridge over the River Leam, for the B.C. Mr. J. J. Kennan, Borough Engineer, Town Hall, Leamington Spa. Deposit £5.

APRIL 27.—**Penarth.**—ALTERATIONS AND ADDITIONS.—Alterations and additions at the Post Office, Penarth, for H.M. Office of Works. King Charles-street, London, S.W.1. Deposit £1 1s.

APRIL 27.—**Penybont.**—HOUSES.—Erection of 12 type A (north) houses, 12 type B (north) houses, 10 type A (south) houses, 16 type B (south) houses, at Lletal Site, Pencoed, for the R.D.C. Mr. Harmar Cox, Clerk, Council Offices, Wyndham-street, Bridgend.

APRIL 27.—**Ramsey, Isle of Man.**—LAVATORIES.—For the erection of public lavatories in Ramsey, for the Town Commissioners. Messrs. G. Kay & Sons, architects, Douglas.

APRIL 28.—**Spenborough.**—SUB-STATION.—Erection of an electricity sub-station at Moorend, for the U.D.C. Mr. A. Pickersgill, Electricity Works, Dewsbury-road, Cleckheaton. Deposit £1.

*APRIL 29.—**Bradford.**—HOUSES.—Erection of 16 houses, Class A, 18 houses, Class B, 16 houses, Class B and B4, for the City of Bradford Corporation. City Architect, Town Hall, Bradford.

*MAY 1.—**Burton-upon-Trent.**—HOUSES.—Amended tenders invited for the erection of eight houses at Wellington-street, for the Corporation of Burton-upon-Trent. Borough Engineer and Surveyor, Town Hall, Burton-upon-Trent.

MAY 1.—**Carmarthen.**—PAINTING.—For painting and colouring at various schools, for the C.C. Mr. W. Vincent Morgan, County Architect, County Offices, Carmarthen.

*MAY 8.—**Greenwich.**—SUPERINTENDENT'S LODGE.—Erection and completion of a Superintendent's lodge at Greenwich Cemetery, Shooters Hill, for the Metropolitan Borough of Greenwich. Borough Engineer, Town Hall, Greenwich-road, S.E.10. Deposit £2 2s.

NO DATE.—**Birmingham.**—SHOPS, &C.—Erection of five shops, chambers, and factories in Broad-street, Birmingham. Messrs. Tanfield & Co., solicitors, Midland-chambers, Corporation-street, Birmingham.

NO DATE.—**Nottingham.**—HOUSES, &C.—Erection of house, garage and stables, Morley-road, Carlton, Nottingham; bungalow and motor house, Thorneywood-road, Nottingham; bungalows and garage, Edwinstowe; bungalow, Southwell-road, Mansfield; house and motor house, High Oakham-hill, Mansfield. Mr. E. Bryan Dean, Architect, Market Chambers, Mansfield.

FURNITURE, MATERIALS, etc.

APRIL 15.—**Ely.**—MATERIALS.—Supply of 3,650 tons of granite and 920 tons of gravel. Mr. F. W. Firby, surveyor, Granby-street, Littleport, Isle of Ely.

APRIL 15. — **Fareham.** — MATERIALS. — Supply of granite, basalt or other hard stone, for the R.D.C. Mr. J. F. Whitear, surveyor, 16, Southampton-road, Fareham.

APRIL 15.—**Glasgow.**—MATERIALS.—For the supply of materials to Statute Labour Department. Office of Public Works, 64, Cochrane-street, Glasgow.

APRIL 17.—**Ilkley.**—MATERIALS.—Supply of broken granite, broken limestone, tarred slag and tarred limestone and distilled tar, for the U.D.C. Mr. J. M. Gameson, Surveyor, Town Hall, Ilkley.

APRIL 17.—**Tenterden.**—ROAD MATERIALS.—For supply of road and other materials, for the T.C. Mr. W. L. C. Turner, Surveyor, Town Hall, Tenterden.

APRIL 18.—**Faversham.**—GRANITE.—For the supply of 2,200 tons of Guernsey granite at various stations, for the R.D.C. Mr. J. G. Chittenden, surveyor, Ashford-road, Faversham.

APRIL 18.—**Faversham.**—TAR.—For 17,000 gallons of dehydrated tar, for the R.D.C. Mr. J. G. Chittenden, surveyor, Ashford-road, Faversham.

APRIL 18.—**Grimsby.**—ROAD MATERIALS.—Supply of granite, slag, tar macadam, &c., to the U.D.C. Mr. A. Hobson, Surveyor, Offices, Deansgate, Grimsby.

APRIL 18.—**Maldon.**—ROAD MATERIALS.—Supply to the R.D.C. of (1) 1,000 tons of granite or basalt; (2) 1,900 yards of broken Kentish flints; (3) hire of steam rollers. Mr. E. J. Ennals, Surveyor, 6, Market Hill, Maldon, Essex.

APRIL 19.—**Wilmslow.**—ROAD MATERIALS.—For the supply of road materials for one year, for the U.D.C. Mr. A. S. Cartwright, Surveyor, Council Offices, Wilmslow.

APRIL 20.—**Denmark.**—GLASS.—Supply to the Danish State Railways of various parcels of window, ground and mirror glass and for clear polished glass for covering notices. Department of Overseas Trade, 35, Old Queen-street, London, S.W.1.

APRIL 20. — **Strood.** — Supply of macadam and chippings to the R.D.C. Mr. L. Randerson, surveyor, Meopham, Kent.

APRIL 20.—**Woodhill Spa.**—ROAD MATERIALS.—For the supply of road materials, for U.D.C. Mr. J. E. Chatterton, Clerk, Horncastle.

BUILDING TRADE WAGES IN SCOTLAND.*

THE following are the present rates of wages in the building trade in the principal towns of Scotland. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons Bricklayers' Labourers.	Plasterers'
Aberdeen	1/10½	1/10½	1/9	1/9	1/9	1/9	1/7	1/5½ to 1/6½	
Airdrie	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½	
Alexandria	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½	
Arbroath	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/5½	
Ayr	2/0	2/0	2/0	2/0	2/0	2/0	1/9	1/5½ to 1/6½	
Bathgate	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	1/9	1/5½ to 1/6½	
†Blairgowrie	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	—	—	
Bo'ness	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	2/-	1/8	
Coatbridge	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½	
Dumbarton	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/5	
Dumfries	1/8	1/8	1/8	1/8	1/8	1/11½	1/8	1/2½ 1/2½ 1/3½	
Dundee	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/5	
Dunfermline	2/0½	2/0½	2/0	2/0	2/0½	2/0½	—	1/7½	
Duns	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/0	
Edinburgh	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½	
Falkirk	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½	
Fort William	1/10	1/10	1/10	1/10	1/10	1/10	1/10	1/2½	
Galashiels	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	—	—	
Glasgow	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	2/1	1/7½	
Greenock	1/10	2/0½	1/10	1/10	2/0½	1/9½	1/9	1/5½	
Hamilton	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/7½	
Hawick	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Helensburgh	2/0½	2/0½	2/0	2/0½	2/0	2/0	1/9	1/7½	
‡Inverness	1/11½	—	‡	1/7	1/6½	1/9	1/6	1/0 to 1/3	
Kilmarnock	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	2/1	1/7	
Kirkcaldy	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/6½	
Kirkwall	1/9	1/9	1/9	1/9	1/9	1/9	—	1/2	
Lanark	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7	
Motherwell	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½	
Perth	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/4	
Stirling	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/5	
Stirlingshire (Eastern District)	2/0	2/0	2/0	2/0	2/0	2/0	1/9	1/7	
Wishaw	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½	

* The information given in this table is copyright. The rates of wages in the various towns in England and Wales are given on page 579. † For housing work only; for other work, Masons 1/8, Painters 1/7, Labourers 1/- to 1/4. ‡ Masons and Carpenters on strike.

APRIL 22.—**St. Marylebone.**—PAVING BLOCKS.—For the supply of deal paving blocks, for the B.C. Mr. J. P. Waddington, Engineer, Town Hall, Marylebone-road, N.W.1.

APRIL 24.—**East Preston.**—MATERIALS.—Supply of flints, broken granite, and granite chippings, 40,000 gallons of refined tar, and 1,000 tons of approved gravel, to the R.D.C. Mr. Arthur Shelley, Clerk, Town Offices, Littlehampton.

APRIL 24.—**Paddington.**—MATERIALS.—Supply of road and other materials to the B.C. Borough Surveyor, Town Hall, Paddington, W.2.

APRIL 24.—**Warrington.**—ASHBINS.—Supply of 500 galvanised steel ashbins, for the T.C. Cleansing Superintendent, Central Sanitary Depot, Howley.

APRIL 25.—**London.**—MATERIALS.—Supply to the High Commissioner for India of wire iron (galvanised), timber for making packing cases, shovels, stoking, &c., pipes, steel (lap welded or riveted). Director-General, India Store Department, Belvedere-road, Lambeth, S.E.1.

APRIL 26.—**East Ashford.**—ROAD MATERIAL.—For supply of granite to the R.D.C. Mr. T. W. Pullen, surveyor, Kennington, Ashford, Kent.

ENGINEERING, IRON AND STEEL.

APRIL 15.—**Newcastle-on-Tyne.**—BRIDGE REPAIRS.—Repair of the girder work of the swinging portion of the Newcastle Swing Bridge, for the Tyne Improvement Commissioners. Mr. J. McD. Manson, General Manager, Tyne Improvement Commission, Newcastle-upon-Tyne. Deposit £2 2s.

APRIL 17.—**Burntisland.**—FENCING.—Supply to the T.C. for the housing scheme, of (1) wrought iron railings and gates, (2) privet bushes, (3) wire fencing. Burgh Surveyor, Kirkgate, Burntisland.

APRIL 17.—**Glasgow.**—FIRE APPLIANCES.—Supply of (1) one motor turntable fire escape, 85 feet; and (2) one chassis with 45 h.p. engine. Mr. William Waddell, Chief Officer of the Fire Brigade, 33, Ingram-street, Glasgow.

APRIL 17.—**Maryport.**—RETORT RENEWAL.—For the renewal of one setting of retorts, for the U.D.C. Mr. A. T. Harris, Gasworks, Maryport.

APRIL 18.—**Macduff.**—RAILS.—Supply of about 33 tons of steel rails, heavy bridge type, British standard section No. 70, with clips and bolts, to the T.C. Mr. Arch. Henderson, 21, Bridge-street, Aberdeen.

APRIL 19.—**Leeds.**—SEWER IRONWORK.—Supply of sewer ironwork to the T.C. Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

APRIL 19.—**London.**—CRANES.—Supply to the Bengal Nagpur Railway Co. of two 40-ton steam wrecking cranes. Company's Offices, 132, Gresham House, Old Broad-street, London, E.C.2. Charge £1 1s.

APRIL 20.—**London.**—CAST-IRON PIPES.—For the supply of cast-iron socket pipes, etc., for the Metropolitan Water Board. Offices, New River Head, 173, Rosebery-avenue, E.C. 1.

APRIL 20.—**Manchester.**—STEELWORK.—Supply and erection of steelwork required in the bridge carrying the Town-Planning road No. 25 over the Midland Railway, for the T.C. Engineer, Town Hall, Manchester. Deposit £2 2s.

APRIL 21.—**London.**—POINT RODS.—For the supply of point rods for signal apparatus, for the High Commissioner for India. Director-General, India Store Dept., Belvedere-road, Lambeth, S.E.1.

APRIL 21.—**Portsmouth.**—SEWAGE WORKS.—Construction of brick culverts, detritus and screen chambers, suction culvert, pump foundations and buildings and other works at the Sewage Pumping Station at Eastney, for the T.C. Mr. G. Midgley Taylor, 36, Victoria-street, Westminster, S.W. 1. Deposit £5.

APRIL 22.—**Croydon.**—GAS ENGINE.—For the supply and erection of a gas engine with producer plant and pumps, for the T.C. Borough Engineer, Town Hall, Croydon. Deposit £1 1s.

APRIL 22.—**Sleaford.**—CONCRETE RESERVOIR.—For the construction of a 40,000 gallon ferro-concrete reservoir at Hill Top, Wilburn, for the R.D.C. Mr. W. B. Marsden, Engineer, Council Offices, Northgate, Sleaford. Deposit £1 1s.

APRIL 24.—**Birstall.**—WEIGHBRIDGE.—Supply of a 20-ton weighbridge at Gasworks, for the U.D.C. Mr. Rufus Ellis, Council Offices, Birstall, near Leeds.

APRIL 24.—**Edinburgh.**—TRAMWAY EQUIPMENT.—Supply to the Tramways Department of trucks, electrical equipment of cars, wheels, and axles. Tramways Manager, 2, St. James'-square, Edinburgh.

APRIL 25.—**Ilford.**—BRIDGE.—For the construction of the Red Bridge in reinforced concrete, for the U.D.C. Mr. H. Shaw, Engineer, Town Hall, Ilford. Deposit £2 2s.

APRIL 26.—**London.**—LIFTS, ETC.—For (*a*) Installation of two electric automatic passenger lifts and two electric automatic service lifts at Tooting Bec Mental Hospital, Tooting, S.W.17; (*b*) Installation of a new 3 in. cast-iron socket and spigot gas main and connections at the North Western Fever Hospital, Lawn-road, Hampstead, N.W.3; (*c*) Installation of a new brick-built baker's oven at the North Western Fever Hospital, Lawn-road, Hampstead, N.W.3, for the Metropolitan Asylums Board. Offices, Embankment, E.C.4. Deposit £1.

APRIL 27.—**Leamington.**—BRIDGE.—For the construction of a reinforced concrete bridge over the River Leam, for the T.C. Mr. J. J. Kennan, Engineer, Town Hall, Leamington Spa. Deposit £5.

APRIL 29.—**Needham Market.**—BRIDGE.—Construction of 43 ft. waterway, in three spans, the centre 22 ft; to be reconstructed on an approved system of reinforced concrete, for the East Suffolk C.C. Mr. H. Miller, 16, Museum-street, Ipswich. Deposit £2 2s.

APRIL 29.—**Salford.**—HEATING.—For heating installation at Broughton High School, for the T.C. Secretary, Education Office, Chapel-street, Salford.

MAY 2.—**London.**—LOCOMOTIVES.—For the supply of locomotive engines, for the High Commissioner for India. Director-General, India Store Dept., Belvedere-road, Lambeth, S.E.1.

MAY 4.—**Leeds, etc.**—ENGINEERING LABOUR.—Supply of engineering labour during the period of three years in the following districts: Leeds (Mechanical), Newcastle (Electrical and Mechanical), Southampton (Electrical and Mechanical), for H.M. Commissioners of Works. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W.1.

MAY 5.—**Chester.**—EMBANKMENT.—Rebuilding and strengthening portion of retaining wall and strengthening the whole of the embankment at Grosvenor Bridge, for the T.C. Mr. C. Greenwood, City Engineer, Town Hall, Chester. Deposit £2 2s.

MAY 7.—**Rochdale.**—SULPHATE OF AMMONIA PLANT.—Supply and erection of sulphate of ammonia plant, for the Gas Committee. Chairman, Gas Committee, Gas Works, Rochdale.

MAY 20.—**Enniskillen.**—RAILS.—Supply to the Sligo, Leitrim and Northern Counties Railway Company of 240 tons of British Standard flat-bottom steel rails, with fishplates. Secretary, S.L. and N.C. Railway, Enniskillen.

JUNE 19.—**Argentina.**—BRIDGES.—Supply and erection of suspension bridges for local authorities. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

AUGUST 1.—**Siam.**—RAILWAY CARRIAGES.—For the supply of 25 underframes for bogie carriages, for the Department of State Railways. Messrs. C. P. Sandberg, 40, Grosvenor-gardens, S.W.1. Charge £2.

OCTOBER 31.—**New South Wales.**—BRIDGE.—Construction of the superstructure and substructure of a cantilever bridge across Sydney Harbour from Dawes Point to Milson's Point, for the Government of New South Wales. Agent-General for New South Wales, Australia House, Strand, London, W.C.2.

NO DATE.—**Algeria.**—PORT.—Construction of port at Bougie, for the Government. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

ROAD, SANITARY, AND WATER WORKS.

APRIL 15.—**Bury.**—WATER MAINS.—Construction of intake chamber and laying of circulating water mains, for the T.C. Mr. J. Ainsworth Settle, Borough Engineer, Corporation Offices, Bury. Deposit £2.

APRIL 15.—**Larne.**—WATERWORKS.—For improving the water supply, for the U.D.C. Mr. J. H. H. Swiney, Engineer, Avenue Chambers, Belfast. Charge £1 1s.

APRIL 17.—**Armadale.**—SURFACING.—For surfacing roads and laying kerbs, channels, &c., for the T.C. Messrs. Hunter, Duff & Middleton, engineers, 42, Frederick-street, Edinburgh. Deposit £1.

APRIL 17.—**Caerphilly.**—STREET WORKS.—For street works at Caerphilly and Nelson, for the U.D.C. Mr. T. H. Richards, surveyor, Caerphilly. Deposit £2 2s.

APRIL 17.—**Criccieth.**—GROYNE.—For the construction of a groyne on the seashore in front of Marine-terrace. Mr. W. George, Clerk, Town Hall, Criccieth.

APRIL 18.—**Carlisle.**—SEWERS.—Sewering of portions of Harraby, Upperby, Blackwell and Belle Vue, for the T.C. Mr. Henry C. Marks, City Engineer, 36, Fisher-street, Carlisle. Deposit £3.

APRIL 18.—**Uxbridge.**—TAR SPRAYING.—For tar painting and spraying roads in district, for the U.D.C. Mr. H. M. Blackwell, Clerk, Council Offices, 121, High-street, Uxbridge.

APRIL 19.—**Hull.**—ROADS.—Resurfacing one mile of the Holderness-road from the boundary of the City of Hull to Salts House, for the East Riding C.C. County Surveyor, County Hall, Beverley. Deposit £1.

APRIL 19.—**Middleton.**—ROADS.—Draining and surfacing of a portion of the Market-place, Middleton, in (a) tarred macadam, (b) granolithic paving, for the T.C. Surveyor, Town Hall, Middleton.

APRIL 20.—**Baildon.**—WATER MAIN.—Laying of 560 yards of 6-in. cast iron water main, for the U.D.C. Mr. C. E. Bean, Engineer, Council Offices, Baildon. Deposit £1 1s.

APRIL 20.—**Heston & Isleworth.**—RESURFACING.—For resurfacing the Staines-road, Hounslow, for the U.D.C. Mr. J. G. Carey, Engineer, Council House, Hounslow. Deposit £2 2s.

APRIL 20.—**Oswestry.**—SEWER.—For the laying of 752 yards of 12 in. stoneware sewer, etc., at St. Martin's, for the R.D.C. Messrs. Berrington, Son & Watney, engineers, Prudential Chambers, Lichfield-street, Wolverhampton. Deposit £5 5s.

APRIL 20.—**Ravensthorpe.**—ROADS.—Repairs to Aire-street, for the Co-operative Society. Sec., Ravensthorpe Co-operative Society, 1, Commercial-street, Ravensthorpe, Dewsbury.

APRIL 20.—**Sutton Coldfield.**—ROAD WORK.—For slag foundations and bituminous surface coating of the Tamworth-road, for the T.C. Mr. W. A. H. Clarry, Surveyor, The Council House, Sutton Coldfield. Deposit £1.

APRIL 21.—**Tottenham.**—DRAINAGE.—For deep land drainage at Tottenham Cemetery, for the Burial Board. Mr. J. C. S. Mummery, 34, Bloomsbury-square, W.C.

APRIL 22.—**Sleaford.**—WATERWORKS.—For laying cast-iron water mains and the erection of an engine-house, for the R.D.C. Mr. W. B. Marsden, Engineer, Council Offices, Northgate, Sleaford. Deposit £1 1s.

APRIL 24.—**Alsager.**—BOREHOLE.—Deepening an existing borehole, for the U.D.C. Messrs. G. & F. W. Hodson, Consulting Engineers, Loughborough. Deposit £2 2s.

*MAY 4.—**Dover.**—ROADS, SEWERS, WATER MAINS.—Construction of the roads and sewers, and the laying of water mains and other incidental work in connection with the above scheme, for the Borough Corporation. Borough Engineer, Maison Dieu House, Dover. Deposit £2 2s.

MAY 5.—**Swindon.**—SEWAGE DISPOSAL.—Construction of sewage purification works, Rodbourne, for the T.C. Mr. G. Midgley Taylor, 36, Victoria-street, Westminster, S.W.1. Deposit £5.

NO DATE.—**Eastbourne.**—RESURFACING.—For resurfacing with tar macadam 3,500 yards of road, for the T.C. Borough Engineer, Eastbourne.

Competitions.

(*See Competition News, page* 548.)

Auction Sales, Tenders, etc.

APRIL 19.—**Bournemouth.**—Messrs. Rawlence & Squarey sale at Havergal Hall, Post Office-road, Bournemouth, freehold marine residential property, known as "Wentworth Lodge," has been disposed of by private treaty, and sale is cancelled.

APRIL 19.—**Three Bridges, Sussex.**—Messrs. Knight, Frank & Rutley will sell by auction a freehold woodland building estate, known as Park Wood, Worth, area over 31 acres, at the "Fox Hotel," at 3 p.m. Auctioneers, 20, Hanover-square, W.1.

*APRIL 21, 22, AND 24.—**Cramlington, Northumberland.**—Messrs. Anderson & Garland will sell, by direction of the Disposal Board, at Cramlington Aerodrome, Northumberland, hutting, corrugated iron sheds, brick buildings, electric generating plant, heating boilers and plant, sanitary fittings. Auctioneers, New Market-street, Newcastle-upon-Tyne.

*APRIL 25.—**Clapham, S.W.**—Messrs. Veryard & Yates will sell, without reserve, at 255, Clapham-road, Stockwell, timber, fittings and building materials. Auctioneers, 365, Norwood-road, S.E.27.

PATENTS.

* APPLICATIONS PUBLISHED.

147,646.—A. C. Pohlmann and P. A. R Frank: Wall of concrete, ferro-concrete, or similar materials.

171,052.—J. R. Newman and J. H. Wilson: Concrete structures.

172,082.—L. Freeborn: Reinforced concrete columns.

172,090.—R. L. Bendall: Construction of walls and other building structures, and tiles for use therein.

151,604.—F. A. Palen: Building constructions.

172,164.—J. S. Baines, jnr., and T. H. Joyce Building blocks.

172,179.—C. E. Clewley: Extensible ladders.

172,235.—M. M. Smith: Apparatus for use in constructing openings for window frames and doors.

172,344.—M. Compare and H. V. Barlow: Fire and burglar alarm.

172,354.—D. J. Owen: Machines for moulding or casting blocks of concrete and such like.

172,362.—S. R. Parkes: Window sash fasteners and the manufacture of the same.

172,365.—Crompton & Co., Ltd., and W. F. Jones: Means for securing metal or other bodies to slabs or blocks of insulating or other material.

172,418.—E. Meldal: Apparatus for use in the making or repairing of roads and pavements.

172,438.—G. Barker (W. R. Johnston Manufacturing Co.): Curtain windows.

172,444.—A. J. Dubee: Rattling-preventers for windows.

172,459.—Smith & Davis, Ltd., and H. F. Smith: Sliding bolts for securing wire blinds and for doors and for other like uses.

172,474.—W. E. Higgs and A. Drew: Scaffolding for building purposes.

172,475.—B. O. W. Hesselman and O. M. G. Mattsson: Machine for manufacturing hollow building blocks.

172,490.—C. Gray and J. Harrison: Casement stay.

172,505.—H. M. Heath: Door springs.

157,296.—W. Breil: Production of linings for shafts sunk by the freezing process.

158,260.—V. Zimmermann: Safety door lock.

172,554.—A. Bridges: Poultry houses and pigeon lofts.

172,585.—N. Vaux: Tiles or blocks for use in concrete constructions.

172,664.—C. J. Mannell: Pressing-machines for the manufacture of blocks, slabs, or the like from concrete or other mouldable materials.

172,669.—J. T. Sentrop, jun.: Construction of flooring or the like.

172,677.—H. Loesch: Moulds for use in the construction of concrete houses.

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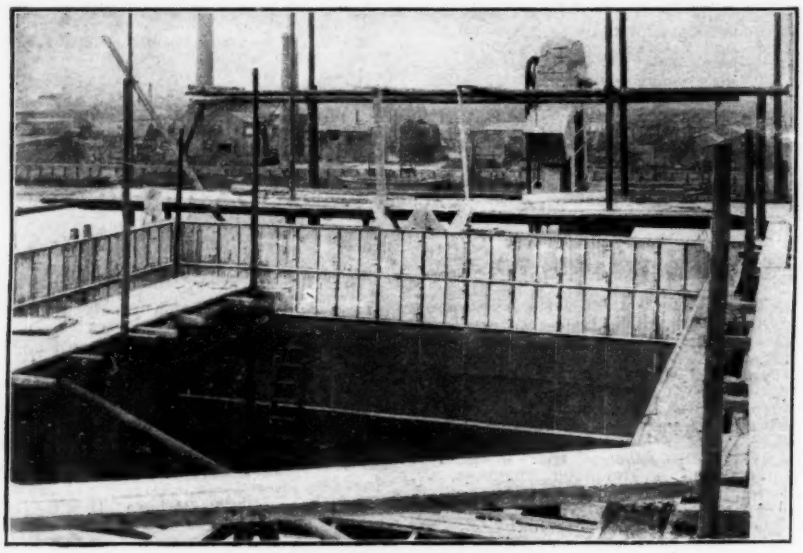
*All these applications are now in the stage in which opposition to the grant of Patents upon them may be made.

NEW REINFORCED CONCRETE GRAIN STORE.

THE building illustrated on this page, of which Messrs. Trant Brown & Brightiff, of High-road, Kilburn, N.W. 6, are the architects, is being erected on the riverside at Battersea for Messrs. Garton, Sons & Co., and is known as Southampton Wharf. The works as a whole occupy an area of about five acres, of which the building illustrated covers approximately three-quarters of an acre. It was originally proposed to carry out the work in brick, but owing to the war-time restrictions it was decided to use concrete as the constructional material. The same restrictions



New Grain Store at Battersea : Silo during Construction.
MESSRS. TRANT BROWN & BRIGHTIFF, Architects.

considerably hindered the progress of the work, but the building is now nearing completion. When completed, its main function will be the storage of materials used in the manufacture of corn syrup, and also the storage of the by-products of the business. Owing to the proximity of the river considerable site difficulties had to be overcome, and the foundations have been constructed on the raft principle with reinforced concrete on made-up ground. The main building is two stories in height, the first floor being supported by concrete pillars and beams. Perhaps the most interesting feature is the silos, of which there are ten, at the side of this building. These are built to hold 2,000 tons of maize, which raw material is unloaded from barges at the wharfside by an electric elevator by which it is conveyed first to the cleaning machines, from whence it is taken by a band conveyor to the silos. As required for use, the maize is conveyed by travelling bands from the silos to the different departments of the factory for conversion into corn syrup. The silos are 115 ft. by 27 ft. by 50 ft. in height, and are of reinforced concrete. The main building is of mass concrete, placed in position with the aid of metal forms. The reinforcement was supplied by the British Reinforced Concrete Engineering Co., Ltd. and the contractors for the whole of the work are Messrs. Holliday & Greenwood, Ltd., of Battersea.

The concrete walls in this building are being erected with the aid of "Metaforms," supplied by Messrs. A. A. Byrd & Co., of 50, Cannon-street, E.C. This system consists of forms of sheet-iron fitted with clamps which by a simple upward movement securely lock each mould to its neighbour. The plates are made of a standard depth of 24 in. and in widths from 24 in. down to 2 ins. The size and weight of the forms are such that they are easily handled, and no heavy scaffolding is required by the system by which they are held in position while the concrete is being poured, and while it is setting no bracing is required. The forms leave a clear wall face, on which it is possible to dispense with the use of plaster. A further advantage is claimed for this system in that the loss of cement is reduced to a minimum owing to the closeness with which the forms fit together when in position.

CORROSION OF FERROUS METALS.

AT a meeting of the Institution of Civil Engineers on Tuesday last week, Sir Robert Abbott Hadfield, Bart., D.Sc., D.Met., F.R.S., M.Inst.C.E., read a paper on "Corrosion of Ferrous Metals," in which he referred to the preparation of the various ferrous metals used in the corrosion research of the Institution of Civil Engineers, together with their physical and mechanical properties, and some general considerations on the subject of corrosion.

In 1916 a committee was formed of members of the Institution, under the chairmanship of the late Sir William Matthews, K.C.M.G., to investigate the subject of the deterioration of structures exposed to sea action. An important part of the Committee's investigations related to the subject of the corrosion of structures involving the use of ferrous metals. The author was consulted as to the most desirable materials for testing, and recommended the various types described in the paper, planning and arranging the composition of the different steels.

The nature, chemical composition, and other qualities of the various materials and specimens employed in the research were dealt with by the author. In the case of non-rusting steel, data were given which showed that the resistance of this steel to corrosion when almost constantly wetted by sea-spray depended on its physical constitution.

The allocation of the specimens to the different testing centres was referred to, and the methods adopted for identification described.

The author discussed the various theories of corrosive action and the behaviour of special materials, and referred to the work of previous investigators, specially those concerned with materials of a similar nature to those included in the present research.

The influence of copper on the resistance of steel to corrosion was considered, including the research work in this direction by various investigators in England, America and Germany. In the author's opinion, the beneficial effect of copper had not yet been fully established, and the addition of copper to steel for the purpose of preventing or mitigating corrosion would not generally be advisable.

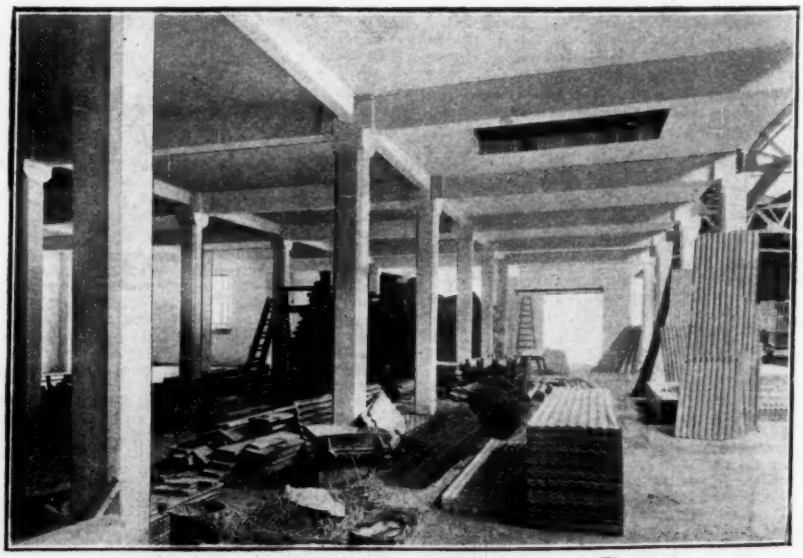
Examples were given of special steels possessing high resistance to corrosion. During the war a large number of diaphragms used in connection with submarine work was made of rustless steel by the author's firm. The diaphragms were placed in the hull of the submarine several feet below the water line, and proved immune from sea-water corrosion under these severe conditions.

Some specimens of historical interest, showing high resistance to corrosion, were described.

The author called attention to the wastage of the world's iron and steel from corrosion, the full extent of its ravages being only realised when an attempt was made to estimate them. The world's output of iron and steel during 1860–1920 was estimated at 1,860 million tons, of which 660 millions might be considered lost by rusting in use. For the year 1920 the loss by rusting in use was estimated at 29 million tons, and for that year, with steel at £20 per ton, and after making allowances for protection, &c., the annual cost of wastage was probably over 700 million pounds sterling.

Proposed New Cinema.

It is proposed to erect a new cinema at Swinton, near Rotherham. The site is situated in Station-road, and the building will have a seating capacity of 950 persons. The architect is Mr. P. A. Hinchliffe, of 19, St. James'-street, Sheffield.



New Grain Store at Battersea: Ground Floor.
MESSRS. TRANT BROWN & BRIGHTIFF, Architects.

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue several prices have been revised.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge.

	£ s. d.
Best Stocks	4 2 0

Per 1000, Delivered at London Goods Stations.

	£ s. d.		£ s. d.
Flettons, at			
King's Cross	3 5 0	Best Blue Pressed Staffs.	10 11 6
Do. grooved for plaster	3 7 0	Do. Bullnose	11 1 6
Do. Bullnose	4 0 0	Blue Wire Cuts	8 11 6
Best Stourbridge Fire bricks:—			
2½ in.	11 3 0	3 in.	13 2 0
GLAZED BRICKS—			
Best White, Ivory, and Salt Glazed Stretchers	24 0 0	D'ble Str'tch'rs	32 10 0
		D'ble Headers	29 10 0
		One Side and two Ends	33 10 0
Headers	23 10 0	Two Sides and one End	34 10 0
Quoins, Bullnose and 4½in. Flats	30 10 0	Splays and Squints	32 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

	s. d.	
Thames Ballast	14 0	per yard, delivered 2 miles radius Paddington.
Pit Sand	17 0	
Thames Sand	19 0	
Best Washed Sand	19 0	
½ in. Shingle for Ferro-Concrete	19 0	
¼ in. " "	20 0	

Per ton delivered in London area in full van loads.

	£ s. d.	£ s. d.
Best Portland Cement British Standard Specification Test	3 10 6	3 16 0

63/6 alongside at Vauxhall in 80-ton lots.

Ferrocrete per ton extra on above	10 0

NOTE.—The sacks are charged at 1s. 9d. each and credited at 1s. 6d. each if returned in good condition within three months, carriage paid.

Best Ground Blue Lias Lime 2 8 0 at rly. depot.
Grey Stone Lime 61s. 0d. per ton delivered in City and Central districts.
Stourbridge Fireclay in s'cks 37s. 8d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	3 2½
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	3 5½
Do. do. delivered on road wagons at Nine Elms Depot	3 6½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 11½
Do. do. delivered on road wagons at above stations, per ft. cube	5 0½
White basebed, 3d. per ft. cube extra.	
NOTE.—½d. ft. cube extra for every foot over 20 ft. *average*, and ½d. beyond 30 ft.	
YORK STONE, BLUE—*Robin Hood Quality.*	
Delivered at any Goods Station London.	s. d.
6 in. sawn two sides landings to sizes (under 30 ft. super.) Per Ft. Super	6 1½
6 in. rubbed two sides, ditto "	6 7½
3 in. sawn two sides slabs (random sizes) "	2 7
2 in. to 2½ in. sawn one side slabs (random sizes) "	1 8
1½ in. to 2 in. ditto, ditto "	1 5
HARD YORK—	
Delivered at any Goods Station London.	
Scappled random blocks Per Ft. Cube	7 6
6 in. sawn two sides landing to sizes (under 40ft. super.) Per Ft. Super	6 6
6 in. rubbed two sides ditto "	7 2
4 in. sawn two sides slabs (random sizes) "	3 4
3 in. ditto, ditto "	2 10
2 in. self-faced random flags Per Yard Super	9 9

WOOD.

GOOD BUILDING DEAL.

Inches	£ s.	
4 × 11	36 0	per standard
4 × 9	35 0	"
4 × 8	30 0	"
4 × 7	30 0	"
3 × 8	30 0	"
3 × 7	25 0	"
2½ × 7	25 0	"
3 × 6	25 0	"
3 × 11	34 0	"
2 × 11	32 0	"
3 × 9	30 0	"
2½ × 9	30 0	"
3 × 4½	20 10	"
3 × 4	20 10	"

PLANED BOARDS.

1 × 11	42 10	"
1 × 9	37 10	"

PLAIN EDGE FLOORING.

Inches		
½	20/-	per square
¾	22/6	"
1	25/-	"
1¼	32/6	"
1½	44/-	"

TONGUED AND GROOVED FLOORING.

Inches		
1	25/-	per square
1¼	32/6	"
1½	44/-	"

WOOD (*Continued*).

MATCHINGS (BEST).

Inches		
½	17/6	per square
¾	22/6	"
1	25/-	"

BATTENS.

Inches	s. d.	
½ × 2	3 0	per 100 ft.

SAWN LATHS.

Per bundle	0 4 0

Dry Wainscot Oak, per ft. super, as inch	0 2 6	to	0 3 0		
½ in. do. do.	0 1 10½	to	0 2 6		
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0 2 3	to	0 3 0		
Cuba Mahogany	0 3 6	to	0 4 0		
Teak (Rangoon, Moulmein or Java), per load	52 10 0	to	55 0 0		
American Whitewood planks, per ft. cube	0 16 0	to	0 18 0		
Best Scotch Glue, per cwt	7 2 0	to	—		
Liquid Glue, per cwt.	4 18 0	to	6 0 0		

SLATES.

1st quality slates from Bangor or Portmadoc in truck load delivered London area. Per 1,000 of 1,200.

		£ s. d.
Best Blue Bangor Slates,	24 by 12	46 10 9
" " "	22 by 12	42 5 0
First quality " "	22 by 11	39 0 0
" " "	20 by 12	37 2 6
Best Blue Portmadoc	20 by 10	31 15 0
" "	18 by 10	26 5 0
First quality "	18 by 9	23 2 6
" "	16 by 10	22 0 0
" "	16 by 8	17 2 6

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district	7 0 0
Ditto hand-made ditto	7 15 0
Ornamental ditto	8 0 0
Hip and valley tiles (per dozen)	0 12 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—

	£ s. d.
R. S. Joists, cut and fitted	14 10 0
Plain Compound Girders	16 10 0
" Stanchions	18 0 0
In Roof Work	22 0 0

WROUGHT IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £15 net value delivered direct from Works. 5 per cent. less above gross discounts, carriage forward if sent from London Stocks.)

Tubes (all sizes).	Fittings, Up to 2".	Fittings, Over 2".	Flanges, Up to 2".	Flanges, Over 2"
Gas	47½%	45%	50%	60%	65%
Water	41½%	40%	45%	55%	60%
Steam	35%	35%	40%	50%	55%
Galv'd—					
Gas	32½%	37½%	42½%	52½%	57½%
Water 25%	32½%	37½%	47½%	52½%
Steam 17½%	27½%	32½%	42½%	47½%

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles. s. d.
2 in. per yd. in 6fts plain	3 10½	3 4	4 0
2½ in. "	4 8	3 8	5 0
3 in. "	5 6½	4 0	6 0
3½ in. "	6 1	5 0	7 0
4 in. "	6 10½	5 8	8 0

RAIN-WATER PIPES, &C.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles. s. d.
2 in. per yd. in 6fts. plain	2 6½	2 0	2 8
2½ in. " "	2 9½	2 4	3 2½
3 in. " "	3 4½	2 10	4 3
3½ in. " "	4 0	3 4	5 0
4 in. " "	4 6	4 1½	6 1

L.C.C. DRAIN PIPES.—9 ft. lengths. London Prices per yd.: 4 in., 5/9. .. 5 in., 7/2. .. 6 in., 8/9.

Per ton in London.

IRON—	£ s. d.		£ s. d.
Common Bars	13 10 0	to	14 10 0
Staffordshire Crown Bars good merchant quality	14 10 0	..	15 10 0
Staffordshire "Marked Bars"	17 10 0	..	18 10 0
Mild Steel Bars	12 10 0	..	13 10 0
Steel Bars, Ferro-Concrete quality, basis price	12 10 0	..	13 10 0
Hoop Iron, basis price	17 0 0	..	18 0 0
" Galvanised	31 0 0	..	33 0 0
Soft Steel Sheets, Black—			
Ordinary sizes to 20 g.	15 0 0	..	16 0 0
" " " 24 g.	16 0 0	..	17 0 0
" " " 26 g.	17 10 0	..	19 10 0
Sheets Flat Best Soft Steel, C.R. & C.A. quality—			
Ordinary sizes, 6ft. by 2ft. to 3ft. to 20 g.	21 0 0	..	22 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 22 g. and 24 g.	22 0 0	..	23 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 26 g.	24 0 0	..	26 0 0
Flat and Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 9ft. 20 g.	21 10 0	..	22 10 0
Ordinary sizes, 6ft. to 9ft. 22 g. and 24 g.	22 0 0	..	23 0 0
Ordinary sizes, 6ft. to 9ft. 26 g.	24 0 0	..	25 0 0

METALS (*Continued*).

Per ton in London.

	£ s. d.		£ s. d.
Sheets Galvanised Flat, Best quality—			
Best Soft Steel Sheets, 6ft. by 2ft. to 3ft. to 20g. and thicker	27 0 0	..	28 0 0
Best Soft Steel Sheets, 22 g. and 24 g.	28 0 0	..	29 0 0
Best Soft Steel Sheets, 26 g.	30 0 0	..	31 0 0
Cut Nails, 3in. to 6in. (under 3in. usual trade extras.)	24 10 0	..	25 10 0

METAL WINDOWS—Standard sizes suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1/7 to 1/10 per foot super.

LEAD, &c.

Delivered in London.

	£ s. d.		
LEAD—Sheet, English, 4 lb. and up	33 0 0	..	—
Pipe in coils	33 10 0	..	—
Soil Pipe	36 0 0	..	—
Compo pipe	37 0 0	..	—

NOTE—Country delivery, 30s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills per ton	19	0	0	—
Do., ex country, carriage forward per ton	20	0	0	—
COPPER—				
Strong Sheet per lb.	0	2	3	—
Thin " "	0	2	4	—
Copper nails "	0	2	3	—
Copper wire "	0	2	4	—
TIN—English Ingots "	0	1	9	—
SOLDER—Plumbers' "	0	0	10	—
Tinmen's "	0	1	0	—
Blowpipe "	0	1	3	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft.		Per Ft.
15 oz. fourths	4½d.	32 oz. fourths	9½d.
" thirds	5½d.	" thirds	11d.
21 " fourths	6½d.	Obscured Sheet, 15 oz.	7d.
" thirds	6½d.	21 "	9d.
26 " fourths	7½d.	Fluted and Enamelled 15 "	11d
" thirds	8½d.	21 "	1/2

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
⅛ Rolled plate	4½d.
⅛ Rough rolled	6d.
¼ Rough rolled	6½d.
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	7d.
Ditto, tinted	9½d.
Rolled Sheet	6d.
White Rolled Cathedral	5½d.
Tinted do.	7½d.

Cast Plate is same price as rough rolled.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil in pipes per gallon		0 3 7
" " " in barrels "		0 3 8
" " " in drums "		0 3 9
Boiled " " in barrels "		0 4 0
" " in drums "		0 4 2
Turpentine in barrels "		0 6 4
" in drums (10 gall.) "		0 6 7
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		54 5 0
GENUINE WHITE LEAD PAINT— "Father Thames," "Nine Elms," "Park," "Supremus" and other best brands (in 14 lb. tins) not less than 5 cwt. lots per ton delivered		76 0 0
Red Lead, Dry (packages extra)	per ton	37 0 0
Best Linseed Oil Putty	per cwt.	0 17 0
Filocol	per cwt.	0 15 6
Size. X D Quality	fkn.	0 4 6

VARNISHES, &c.

		Per gallon. £ s. d.
Oak Varnish	Outside	0 15 0
Fine ditto	ditto	0 17 2
Fine Copal	ditto	1 1 6
Pale Copal	ditto	1 2 6
Pale Copal Carriage	ditto	1 4 6
Best ditto	ditto	1 14 6
Floor Varnish	Inside	0 19 0
Fine Pale Paper	ditto	0 18 0
Fine Copal Cabinet	ditto	1 2 6
Fine Copal flatting	ditto	1 0 6
Hard drying Oak	ditto	0 18 0
Fine Hard drying Oak	ditto	0 19 0
Fine Copal Varnish	ditto	1 0 6
Pale ditto	ditto	1 2 6
Best ditto	ditto	1 14 6
Best Japan Gold Size		0 12 6
Best Black Japan		0 18 0
Oak and Mahogany Stain (water)		0 17 6
Brunswick Black		0 11 9
Berlin Black		0 16 6
Knotting (patent)		1 16 0
French and Brush Polish		1 8 0
Liquid Dryers in Terebine		0 13 6
Cuirass Black Enamel		0 7 0

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

CURRENT PRICES FOR BUILDING WORK IN LONDON.*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	15	6
Add if in clay	„ „	1	9
Add for every additional depth of 6 ft.	„ „	1	3
Planking and strutting to trenches	per foot super	0	7
Do. to sides of excavation, including shoring	„ „	1	2

CONCRETOR.

		s.	d.
Portland cement concrete in foundation 1 to 6 ..	per yard cube	42	0
Add if in underpinning in short lengths	„ „	9	6
Add if in floors 6 in. thick	„ „	3	10
Add if in beams	„ „	4	9
Add if aggregate 1 : 2: 4	„ „	12	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	„ „	4	0

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	38	10	0
Add if in stocks	„	8	10	0
Add if in Staffordshire blues	„	25	10	0
Add if in Portland cement and sand	„	3	10	0

FACINGS.

		s.	d.
Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1¼

POINTING.

Neat flat strucks or weathered joint.....	„ „	0	0	3

ARCHES.

Extra only to the price of ordinary brickwork :—				
Fair external in half brick rings	„ „	0	0	11½
Axed in stocks	„ „	0	1	11
Rubbed and gauged jointed in putty camber or segmental	„ „	0	6	8

SUNDRIES.

Damp course in double course of slates breaking joint and bedded in Portland cement	„ „	0	1	5
Setting ordinary register grates and stoves	each	1	1	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	„	5	5	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard sup.	7	6
Three-quarter-inch vertical damp course	„ „	11	8
¾ inch on flats in two thicknesses.....	„ „	8	6
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	„ „	1	4

MASON.

		s.	d.
York stone templates fixed	per foot cube	16	3
York stone sills fixed	„ „	28	6
Bath stone and all labour fixed	„ „	15	0
Portland stone fixed	„ „	23	0

SLATER.

		s.	d.
Welsh 16 in. × 8 in. 3 in. lap, including nails....	per square	98	0
Do. 20 in. × 10 in. Do. Do.	„	115	0
Do. 24 in. × 12 in. Do. Do.	„	117	6

CARPENTER AND JOINER.

		s.	d.
Fir framed in plates .....per foot cube		6	6
Do. joists	„ „	7	6
Do. roofs, floors and partitions	„ „	7	6
Do. trusses	„ „	9	6

		¾″	1″	1¼″	2″
Deal rough close boarding	per sq.	42/–	48/–	56/–	85/–

		s.	d.
Flat centering for concrete floor, including struts or hangers .. „		63	0
Do. to beams .....per ft. sup.....		1	6
Centres for arches ..... „		2	0
Gutter boards and bearers ..... „		1	6

FLOORING.		¾″	1″	1¼″	1½″
Deal-edges shot	per sq.		49/–	58/–	67/–
Do. tongued and grooved	„		54/–	65/–	72/–
Do. matchings	„	45/–	55/–		
Moulded skirting, including backings and grounds .....per ft. sup.		1/8	2/1	2/3	2/9

SASHES AND FRAMES.		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	11
Two Do. Do. Do.	„ „	2	4½
Add for fitting and fixing	„ „	0	6
Deal-cased frames with 1 in. inner and outer linings, 1½ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares double hung, double hung with pulleys, lines and weights ; average size.....	„ „	4	9

DOORS.		1½″	1¾″	2″
Two-panel square framed .....per ft. sup.		2/6	2/9	2/11
Four-panel Do.	„	2/10	3/2	3/5
Two-panel moulded both sides	„	3/2	3/5	3/8
Four-panel Do. Do.	„	3/6	3/9	4/–

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	15	6

		1″	1¼″	1½″
Plain deal jamb linings framed	per ft. sup.	1/11	2/–	2/3
Deal shelves and bearers	„	1/8	1/10	2/1
Add if cross tongued	„	2d.	2d.	2d.

STAIRCASES.

	1″	1¼″	1½″	2″	2½″
Deal treads and risers in and including rough brackets	2/3	2/6	2/11	—	—
Deal strings wrot on both sides and framed	1/9	2/1	2/3	2/9	—

		s.	d.
Housings for steps and risers	each	0	11½
Deal balusters, 1 in. × 1¼ in.	per ft. run.	0	9
Mahogany handrail ; average 3 in. × 3 in.	„ „	6	0
Add if ramped	„ „	11	10
Add if wreathed	„ „	23	9

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/4½
Sash fasteners .....11½d.		Mortice locks	5/3
Casement fasteners	1/5	Patent spring hinges and letting in to floor and making good	19/-
Casement stays.....	1/2		
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	19	0
Plain compound girders	„	22	0
Do. stanchions	„	25	0
In roof work	„	30	0

RAIN-WATER GOODS.

		3″	4″	5″	6″
Half-round plain rebated joints ..	ft. run	1/11	2/4½	3/7	4/-
Ogee Do. Do. ..	„	2/4½	3/1	3/10	4/9
Rain-water pipes with ears	„	2/9	3/7		
Extra for shoes and bends	each	4/4	5/11		
Do. stopped ends	„	1/11	2/4½	3/7	4/-
Do. nozzles for inlets	„	2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt.	56	0
Do. Do. in flats	„	52	0
Extra labour and solder in coated cesspools	each	7	4
Welt joint	per ft. run.	0	6
Soldered seam	„ „	1	10
Copper nailing	„ „	0	7

		½″	¾″	1″	1½″	2″	4″
Drawn lead waste	per ft. run	10d.	1/3	1/9	3/1	3/10	
Do. service	„	1/5	1/11	2/3	3/6		
Do. soil	„						6/2
Bends in lead pipe	each					3/3	8/2
Soldered stop ends	„	1/2	1/8	2/1	2/10	3/6	
Red lead joints	„	11d.	1/–	1/3	1/11	2/4	4/10
Wiped soldered joints	„	2/10	3/6	4/–	4/11	6/6	9/9
Lead traps and cleaning screws	„				14/7	19/6	
Bib cocks and joints ..	„	6/4	9/7	15/4	41/–		
Stop cocks and joints	„	15/4	17/2	25/8	64/–		

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	3	2
Do. Do. Sirapite	„ „	3	7
Do. Do. Keen's	„ „	4	9
Add sawn lathing	„ „	1	9
Add metal lathing	„ „	3	0
Portland cement screed	„ „	2	9
Do. plain face	„ „	4	6
Mouldings in plaster	per 1 girth	0	3
One-and-a-half granolithic pavings	per yard sup.	6	7

GLAZIER.

		s.	d.
21 oz. sheet plain	per foot sup.	1	1
26 oz. Do.	„ „	1	4
Obscured sheet	„ „	1	8
¼ in. rolled plate	„ „	1	0
¼ in. rough rolled or cast plate	„ „	1	1
¼ in. wired cast plate	„ „	1	7

PAINTER.

		s.	d.
Preparing and distempering, 2 coats	per yard sup.	1	3
Knotting and priming	„ „		8
Plain painting 1 coat	„ „	1	0
Do. 2 coats	„ „	1	9
Do. 3 coats	„ „	2	6
Do. 4 coats	„ „	3	3
Graining	„ „	2	8
Varnishing twice	„ „	2	0
Sizing	„ „	0	4
Flatting	„ „	0	8
Enamel	„ „	1	6
Wax polishing	per foot sup.	0	10½
French polishing	„ „	1	3
Preparing for and hanging paper	per piece	2/- to 4/-	

* These prices apply to *new buildings only*. They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 1½ should be added for Employers' Liability and National Health and Unemployment Acts and from 1s. 6d. per £100 for Fire Insurance The whole of the information given on this page is copyright.

PROPOSED NEW BUILDINGS & OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

AUDENSHAW.—Plans passed by U.D.C.:—Hut, Booth-road, for Mr. C. Harton; lavatory, Corporation-road, for Planet Foundry Co.

BATH.—Plans passed by T.C.: Drainage, 25, Gay-street; new shop front and pavement light, 32, Stall-street; alterations, 17 & 18, Southgate-street; alterations, 10, Kingsmead-square; boiler house and refrigerator room, rear of 18 Philip-street; alterations to garage, Queen-street; bungalow, Bradford-road; alterations, Princes-street and Barton-street; alterations, rear of 61, Ringwood-road; alterations, Farm House, Northfields Building Estate; enlargement of shop window, &c., 13, St. George's-place, Upper Bristol-road; conversion into flats, 32, 33 & 34, Pulteney-street; sewer, Newbridge Park.——The Architect has been directed by the T.C. to obtain the terms for sale of the old gaol, Tiverton, and the cost of adapting the premises for use as baths.

BOLTON.—Plans passed by T.C.:—Mr. Chas. 3 holes. motor garage, off Newnham-street; Mrs. J. W. Mather, bay windows, 47, Sharples Park; Chalfont-street I.M. Cricket Club, pavilion, off Belmont-road; Messrs. Thos. Hardcastle & Sons, Ltd., scullery, 3, Castle-hill; Messrs. Thos. Hardcastle & Sons, Ltd., shed, off Firwood-lane; Mr. James Haslam, wooden store sheds, Romer-street; Mr. Joseph Fitzcroft, eight houses, Hurst-street, Morris Green; Mr. Richard Thompson, greenhouse, 505, Wigan-road; Mr. Robert Howarth, mason's shed, Junction-road; Mr. Joshua Rodgus, store, 9, Hulton-lane; Bolton Co-operative Society, Ltd., house and three shops, Wigan-road; Bolton Co-operative Society, Ltd., street, Wigan-road; Mr. J. F. Steele, motor garage, "Beechville," Lostock; Mr. J. H. Lomax, garage, "Fairholme," New Hall-lane; Mr. J. Nuttall, wooden garage, "The Marklands," Markland Hill-lane; Mr. Thomas Dutton, extensions to house, "Westgarth," Albert-road West; Messrs. Wm. Gornall & Sons, pair of villas, Carlton-road; Mr. Alfred Hardman, motor house, 70, Chorley Old-road; Mr. Herbert Craig, porch, 21, Wilmot-street; Mr. T. Woods, steelwork for cinema, St. George's-road; Mr. R. Heaton, additions to premises, 82, Bradshawgate; Mr. A. Robinson, store shed, off Rushey Fold-lane; Mr. F. J. Webster, warehouse, Walker-street, Spa-road; National and Provincial Bank, extension of premises, Princess-street; Messrs. J. Marsden & Sons, Ltd., extension to card shed, Albion Mills; Mr. G. W. Scott, alterations to premises, corner of Stanley-street and Deane-road; Messrs. Knowles, Ltd., dining-room, Turton-street; Northern Combines, Ltd., alterations to cinema, Temperance Hall; Messrs. Dore & Simister, garage, Back Willows-lane.

BOURNEMOUTH.—Plans passed by T.C.:—Alterations and additions, 47, Southbourne-grove, for Messrs. Butt & Sons; motor house, "The Lodge," Charminster-avenue, for Mr. J. H. Lake; additions, Clarence Park Motor Works, Christchurch-road, for Messrs. H. & H. Hunt; additions, "Camberley Cottage," Dalmeny-avenue, for Major Winder; additions, rear of 192, Old Christchurch-road, for Messrs. Wilkins, Ltd.; store, rear of 273 and 275, Christchurch-road, for Mr. J. R. Edgecombe; alterations and additions, 231, Wimborne-road, for Mr. E. J. Mitchell; additions, "Lendal," Queen's Park-avenue, for Mr. A. T. Riceman; garage, 6, Dean's-road, for Mr. H. G. Mills; motor house, Bengal-road, for Mr. S. Harris; additions to shop, 6, Palmerston-road, for Mr. A. J. Abbott; motor house and additions to house, Rosebery-road, for Mr. G. Witt; house and garage, corner of Rosebery and Harcourt-roads, for Mr. G. Witt; garage and billiard room, "Keresforth," Oxford-avenue, for Mr. G. Drewitt; house, Gresham-road, for Mr. H. Welstead; house, East-avenue, for Mr. A. D. Lambert; four bungalows, Charminster-road, for Mr. E. Welstead; house and garage, Portman-crescent, for Mr. H. Goode; house and garage, Richmond Park-avenue, for Mrs. L. Tyson; motor house, "Wood Lodge," Manor-road, for Dr. Skyrme; two houses, Browning-avenue, for Messrs. F. W. Burton & Sons; alterations and additions, "Penmellyn," Richmond Hill, for Messrs. G. E. & W. R. J. Lambert; house, Grasmere-road, for Mr. J. Newbury; house, Pine-road East, for Mr. E. Walker; additions, rear of 40, Stewart-road, for The Hampshire Condiment Co.; conversion of house into two shops, Charminster-road, for Mr. J. Drewitt; bungalow, Carbery-avenue, for Mrs. H. Dan; house, Grand-avenue, for Mr. J. Moody; house, Berkeley-road, for Mrs. E. M. Warde; house, Firs Glen-road, for Mr. J. S. Dyer; additions, "Eveston," Richmond Park-avenue, for Mr. E. E. Insley; extension of shop front, 84, Seabourne-road, for Mr. A. Barrett; house and garage, Bryanstone-road, for Mr. C. F. Woodworth; bungalow, Charminster-avenue, for Mr. J. Brown; garage, Rutland-road, for Mr. A. Hunt; house, Browning-avenue, for Mr. H. Solomon; additions, "Kemspey," 18, Bath-road, for Messrs. Horwill & Lewis; house, Iddesleigh-road, for Mr. A. L. Cox; house and garage, Sobertonroad, for Mr. W. Hayward; two blocks of shops and flats, Kimberley-road, for Mr. M. Sellick; motor house, "Holm Dene," Poole-road, for Mr. E. A. Curtis; garage, 8, Warwick-road, for Mr. A. F. Clarke; semi-bungalow, Oswald-road, for Mr. E. Sheppard; offices, corner Holdenhurst and St. Swithun's-roads, for Mr. W. H. Willoughby; garage, Warwick-road, for Mr. E. J. Mitchell; alterations and additions, rear of premises, Old Christchurch-road, for Messrs. Taylor Bros.; alterations to shop, 151, Malvern-road, for Mr. E. J. Dominey.

BRIDGEND.—The U.D.C. proposes to make extensions and repairs to the electricity works. The U.D.C. is to arrange a housing scheme to cost approximately £12,400 at Nantymoel.

CAMBRIDGE.—Plans passed by T.C.:—Open shed, Abbey-walk, for Mr. Alfred J. Winship, Owlstone-road; covered-in yard, Newmarket-road, for the Star Brewery Co., Ltd., Newmarket-road; timber shed, New-street, for Messrs. Kidman & Sons, Abbey-walk; alterations, 251, Newmarket-road, for Messrs. Bailey & Tebbutt, Panton Brewery, Panton-street; additions, Panton-street, for Messrs. Bailey & Tebbutt, Panton Brewery, Panton-street; additions, Water-street, Old Chesterton, for Mr. A. D. McNair, M.A., Caius College; sanitary improvements, Inner Court, Trinity Hall, for the Master and Fellows, Trinity Hall; shop, Hills-road, for Mr. J. S. Conder, 324, Cherryhinton-road; house, Millington-road, for the Rev. E. C. Hoskyns, Corpus Christi College; pair of houses, Millington-road, for Dr. H. Scott, 7, Tenison-avenue, and B. Gourlay, 20, Trinity-street; alterations, Downing-street, for the Master and Fellows, Pembroke College, Cambridge; additions, rear of 95, Regent-street, for Messrs. E. T. Saint & Co., Regent-street; garage, Milton-road, for Mr. P. M. Mason, 185, Milton-road; house, Milton-road, for Mrs. M. C. T. Jones, 52, St. Barnabas-road; garage, Barton-road, for Mr. B. Hayward, "Fieldside," Barton-road; house, Milton-road, for Mr. L. Stuart Stanley, 10, Kimberley-road; additions, Dorset Hotel, 72, Hills-road, for Mr. J. Hutchinson, 72, Hills-road.

HALIFAX.—Plans passed by T.C.:—Ernest V. Haigh, additions, 17, Exeter-street; Clarkson Bros., sanitary work, Ann-street; W. & E. Richardson, house, Savile Park-gardens; Jas. M. Whiteley, bathroom, 30, Newstead-grove; Thos. H. Horsfall and Arthur G. Farrar, two porches, 20 and 22, Belvoir-gardens; Harold Butler, conversion stable to garage, Moor Royde, Savile Park; Mrs. Donald Sagar, garage, 1, Heath Villas; Sam Webster, conversion of two cottages to one dwelling, Water Hill-lane; Tom Smith, boiler house and colour room, Beacon-road Dyeworks; Goldthorpe Bros., petrol store, &c., Archer-street; W. Hanson & Co., Ltd., raising sprinkler tank, Range Royd Mill; Bentley's Yorkshire Breweries, Ltd., altering premises to billiard room, 21, Silver-street; Ralph Mitchell, piggery, Eastwood Farm, Keighley-road; Trustees of Girls' High School, altering former stabling to School Annex, Savile Park-road; Smith, Bulmer & Co., engine house, Holmfield Mills; William Smith, house, Plane Tree Nest-lane; Greenroyd Bowling Club Co., Ltd., pavilion, Belvoir-gardens, St. Albans-road; Frank Rylands, bathroom, 13, Third-avenue; Sydney Neverson, garage, Elm Royde, Balmoral-place; Dr. William Shaw, garage, Hall-street.

ILKESTON.—Plans passed by T.C.:—Alterations to outbuildings, King-street, for Mr. John Benniston; tool house and shed, Little Hallam, for Mr. W. M. Hallam; alterations to cottage, Stanton-road, for Mr. John Proctor.

LEICESTER.—The T.C. has decided to widen Narborough-road on the western side between Imperial-avenue and the tramway terminus.

LEYTON.—Plans passed by U.D.C.: Jarvis, J., & Sons, Ltd., alterations and addition to beer store, 616, Lea Bridge-road; Bent-Marshall, S., re-drainage of 699, High-road, Leyton; Horn, F. J., builder's store, 105, Manor-road; Ward, W., bay window, 598, High-road, Leytonstone; Hirst, B., bungalow, Fulready-road; Symes, A. E., alterations at Messrs. Abbott Bros. Dairies, Ltd., Hainault-road; Halse, D., & Co., Ltd. alterations to "Holly Bush" P.H., Grange-road; London County Westminster and Parrs Bank, Ltd., alterations and additions to 340, High-road, Leyton; Dartnall, J. A., branch bank for the London County Westminster & Parrs Bank, Ltd., corner of High-road and Aylmer-road, Leytonstone.

LLANDAFF.—Subject to the consent of the Llandaff and Dinas Powis R.D.C., the Cardiff City Council will build a road costing £36,000, and 18 feet wide, over a distance of 1¼ miles from Cyncoed-street to Llanishen reservoir. A second road is to be built from Ely parallel to Green Farm, 18 feet wide, over 1½ miles wide at an estimated cost of £29,000.

LONDON (DEPTFORD).—Building, Warwick-street, for Mr. F. J. Tomkins.——Drainage plans passed by B.C.: At 8 to 28, Liardet-street, for Messrs. A. Staples & Son; at 56A, Kender-street, for Mr. R. Mansell.

LONDON (GREENWICH).—Drainage plans passed by B.C.: Mr. W. E. Champion, 13, Hill-street, Woolwich, at 1 to 11, Richardson's-place; Mr. A. Streets, 62, Bramshot-avenue, Charlton, at premises adjoining Our Lady of Grace Catholic Church, Charlton-road; Mr. H. C. Goulty (for the Guild of Builders), 18, Annandale-road, East Greenwich, at 34, 36, 38, 40 & 40A, Gurdon-road; Mr. B. Gregory, 51, East Dulwich-road, at 73, 74, 75 & 76, Mount-street; Mr. Wm. Layson, 287, Woolwich-road and Messrs. Tamsett & Co., Charlton Village, at 70, 71 & 72, Mount-street; Messrs. G. P. & H. Barnes, Thrale-road, Streatham Park, at 7 & 8, Charlton Park-terrace, Charlton-road; Mr. A. Roberts (for Messrs. G. A. Harvey & Co., Ltd., Woolwich-road), at premises, Woolwich-road; Mr. D. Draisey, 26, Victoria-avenue, South Hounslow, at 24 houses, No. 8 Road, Pound Park, on behalf of Greenwich Borough Council; Mr. George Barker-48 to 50, New-road, E. 1, to build and drain the "Fox-under-the-Hill" P.H., Shooters Hill-road; Mr. A. Shore, 38, Crooms-hill, Greenwich, at four houses, south side of Westcombe Park-road; Messrs. Wm. Harbrow, Ltd., 214, Rotherhithe New-road, at Messrs. Harvey & Co. (London), Ltd.'s premises, Woolwich-road; Mr. Wm. John Reed, 37, Lincoln's Inn Fields, W.C. 2, at 41, Lee-road; The Drapers' Company, Drapers' Hall, E.C., at "Bramhope," Charlton-road; Mr. T. Richardson, 14, St. John's-park, Blackheath, at rear of 14, St. John's-park.

LONDON (ST. MARYLEBONE).—The Special Libraries Committee of the B.C. recommends that a lease be taken of 22 and 23, Gloucester-place, and 26, Dorset-street, for a temporary library, and that alterations, estimated to cost £3,000, be carried out.

MEXBOROUGH—REBUILDING AFTER FIRE.—The plans have been approved for the rebuilding, after fire, of the Hope Institute and Club, Milton-road, Mexborough, near Rotherham. The architect is Mr. P. A. Hinchliffe, 14, Regent-street, Barnsley, and 19, St. James'-street, Sheffield.

NEWARK.—An official start has been made with the Newark sewerage scheme. The scheme is estimated to cost £55,000. Messrs. W. H. Radford & Son, of Nottingham, are the engineers. Mr. J. W. Hipwood, A.M.I.C.E., Borough Engineer of Newark, has assisted them to prepare the scheme.

OSSETT.—Plans passed by T.C.: Garage and extension of warehouse, Sunnybank-street, for Mr. W. Townend, jun.; two houses, Sunnybank-street, for Mr. J. H. Glover; alterations to building, Manor-road, for Mr. T. Y. Proctor.

OXFORD.—Plans passed by T.C.: J. T. Coulson, 10, Essex-street, Strand, W.C. 2, two houses, south side of Victoria-road, Summertown; S. Hutchins & Sons, 1A, Southmoor-road, three houses, West side of Warwick-street; A. E. Lynam, School House, Bardwell-road, extension of lodge at the Dragon School, south side of Bardwell-road; W. Walcot, studio, 263, Iffley-road; F. Martin, 95, Divinity-road, school-room, &c., 7, New Inn Hall-street, attached to New-road Chapel.——The Housing Committee recommends the T.C. to erect six houses in Woodstock-road.

PLYMOUTH.—Plans passed by T.C.: Costers, Ltd., alteration and additions, 6, Frankfort-street; Mr. S. Robins, extension of garage, Elm-road; Mr. E. Brock, alterations and additions, 4, Windsor Villas; Messrs. James Bros. & Co., stores, Richmond-walk; Mr. A. T. Philp, addition, 123, Glendower-road; Mr. S. Rollins, dwelling house, Endsleigh Park-road; Messrs. Mumford & Sons, petrol storage vault, 68, Mutley-plain.

ROCHDALE.—Plans passed by T.C.: J. Child & Sons, mason's shed, Bury-road; W. Sisson & Co., petrol store, 137, Yorkshire-street; Crown Brewery Co., Ltd., alterations and additions to "Bowling Green" Inn, Spotland-road; Rochdale Cinemas, Ltd., picture theatre, Station-road; Chadwick's Walmersley Brewery Ltd., "Flying Horse" Hotel, Packer-street; Rochdale & Manor Brewery, Ltd., Re-building "Jolly Waggoner" Public House, 165, Spotland-road; R. & T. Howarth, offices, Norwich-street; T. Law, house and shop, Durham-street; Barchant Spinning Co., Restoration of works after fire, Livsey-street; E. Brierley, runway and covering yard, 54, Toad-lane; John Kenyon, Ltd., alterations and additions to "Friendship" Inn, James-street; Phœnix Brewery Co., alterations and additions to "Directors' Arms" Hotel, Heywood-road; L. Dex, porch, 31, Drake-street.

RUISLIP-NORTHWOOD.—Plans passed by U.D.C.: Shop and premises, High-street, Ruislip, Mr. J. R. Buckeldee; additions to "Hill End," Bridle-lane, Eastcote, Mr. J. B. Dore; shop and premises, Field End house estate, Eastcote, Mr. J. Lane; alterations to cottage and stable, Ducks-hill, Mr. H. Gordon; detached bungalow, Halden estates, Ducks-hill, Mr. J. W. Stocks; house, Halden estates, Mr. Knap Barrow; house, Halden estates, Mr. W. Maitland Jones; house, Halden estates, Mr. W. Dilling; house, Halden estates, Capt. Crowther; and house, Halden estates, Mrs. Halliday.

ST. HELENS.—Plan passed by T.C.: Alterations to laundry rear of North-road, for the Superioress, Convent of Notre Dame.——It is proposed to lay a double track of tramways from Cropper's-hill to the boundary and to relay the track in Church-street.

SALFORD.—Plans passed by T.C.: Construction of verandah, Ye Olde Priory Inn, Laurel Grove, Broughton; dwellinghouse and garage, Singleton-road, Broughton; garage, Oak Cottage, 673, Eccles New-road, Pendleton; stores and stable, Essex-street, Salford; lock-up shop, Sussex-street, Salford; additions to dwellinghouse, 18, Howe-street, Broughton; Wellington-Inn, Cross-lane, Salford; conversion of dwellinghouse into flats, "Rockavon," Holden-road, Broughton; construction of garage and greenhouse, 359, Lower Broughton-road, Broughton; garage, etc., Knoll-street, Broughton; drain, Adelphi Iron Works, John Dalton-street, Salford; sanitary accommodation, "White Lion," Wood-street, Salford; alterations to sanitary accommodation, Unicorn Hotel, Union-street, Broughton; dwelling-house, Glenluce, Waterpark-road, Broughton; additions to sanitary accommodation, George-street, Salford, Cattle Market Hotel, Cross-lane, Salford; construction of garage, Keat-street, Broughton; external staircase, St. Thomas of Canterbury Schools, Bury-street, Broughton; laundry, Great Clowes-street, Broughton; garage, 248, Great Clowes-street, Broughton; front main wall, Nos. 45-47, Oldfield-road, Salford; garage and stables, Clegg-street, Pendleton; alterations to sanitary accommodation, Blue Bell Inn, Arlington-street, Salford; sanitary accommodation, Punch Bowl Hotel, Chapel-street, Salford; additions to machine shop, Greengate, Salford; conversion of two dwelling-houses into shops, 33-35, Great Clowes-street, Broughton.

SOUTH SHIELDS.—Plans passed by T.C.: Mr. Howard, Hill, for Mr. W. Hitcham, alterations and additions, 27, South Frederick-street and 55, Bertram-street; Mr. Howard Hill, for Mr. A. A. Hendry, bathroom, &c. 1, Trajan-street; Mr. Howard Hill, for Mr. G. Meynell, conversion of stabling into motor garages, 13, Wellington-terrace; Messrs. Caws, Stee & Caws, for Messrs. Henderson Bros., two semi-detached villas, Moore-avenue, Harton; Mr. Howard Hill, for Mr. W. Warnes, alterations to premises in Lady's-walk; Mr. Howard Hill, for Capt. S. Whittles, dwelling house, St. Peter's-avenue, Harton; Mr. Howard Hill, for the South

* See also our List of Contracts, Competitions, etc.

Shields Co-operative Society, temporary shop premises, "The Nook," Harton Village; Mr. F. R. N. Haswell-for Messrs. W. B. Reid & Co., Ltd., sanitary improvements, "George and Dragon" P.H., West Holborn; Mr. F. W. Newby, for Mr. R. H. Brown, new shops at corner of Ada-street and Dean-road; Mr. J. H. Morton, for the Durham and Northumberland Licensed Victuallers' Association, lavatory accommodation to the "Locomotive" Inn, Coronation-street; Mr. G. R. Smith, for Mr. J. Christie, two semi-detached houses, The Avenue, Harton; Messrs. Hepple, Ltd., office extensions and new joiner's shop, &c., at Dock premises, Wapping-street; Mr. J. Jennings, for Mr. W. Rennie, lobby to shop, 3, Candlish-street.

STOCKTON.—Plans passed by R.D.C.: Pavilion for the Preston Cricket Club; office buildings for Messrs. W. Walker & Co., tanners, at Aislaby-road, Yarm; bungalow, Ashfield-avenue, Eaglescliff, for Mrs. Jefferson.

SWINDON.—Plans passed by T.C.: Mr. W. C. Faulkner, alterations, 79, Regent-street; Messrs. Drew & Son, additions to garage, 64, Commercial-road.

THURSTONLAND.—Plan passed: Workshop, for Mr. Albert Gill.

WALLASEY.—Plans passed by T.C.: Two shops and house, &c., in Wallasey Village, for Messrs. Barber & Co.; lock-up shop, Leasowe-road, for J. Irwin, Sons & Co., Ltd.; two sheds, offices and hoarding, corner of Rake-lane and Longland-road, for Messrs. G. Edwards & Sons; workroom, 117, Brighton-street, for Mr. W. Hayes; shed, Wallasey-road, for Mr. J. A. Milestone; retiring rooms at "Riverslea" Tennis Ground, Penkett-road, for Mr. H. G. Clarke; garage, 30, Elgin-drive, for Mr. H. S. Cropper; greenhouse, 109, Seabank-road, for Mr. P. T. Traynor; two dwelling houses, Grove-road, for Messrs. Tate, Pumford & Doughty; house, Hamilton-road, for Messrs. Harrocks Bros.; alterations to the "Great Britain" Hotel, King-street, for Daniel Higson, Ltd.; shed at "Alverstone," Seabank-road, for Mr. A. Talbot; outbuildings and two garages in Wallasey-road, for Mr. W. L. Jones; shed, Green-lane, for Mr. A. Joynson; milk shed, 2, Tancred-road, for Mr. T. Rogers; alterations, 128, Rake-lane, and 2, Zig Zag-road, for Mr. C. Wherly; alterations, 48 & 50, Brighton-street, for Crane & Sons, Ltd.; garage, 25, Elm Park-road, for Mr. D. G. Evans.

WARRINGTON.—Plans passed by T.C.: Nine houses, Briarwood-avenue, for Mr. D. Cooper; garage, in wood and felt covering, Wilson-patten-street, for Mr. J. W. Broadbent; branch premises, Wellington-street, for the Warrington E.I. Co-operative Society, Ltd.; roof over yard, Padgate-lane, for Mr. Chantry; extension to saw mill, Fairclough-avenue, for Mr. H. Fairclough.

WEYMOUTH.—Plans passed by T.C.: Alterations, etc., 22, Gt. George-street, Messrs. S. Jackson & Sons, for Mr. W. G. Allen; store, Marden-street, for Messrs. S. Jackson & Sons; additions, "Runnymeade," Dorchester-road, for Mr. A. J. Samways; villa, Charlton-road, Mr. A. J. Bennett, for Mr. F. Howard; alterations to store at Quay, for Messrs. Chalker & Son; strengthen house, etc., Commercial-road, for Mr. L. C. Downing; rebuilding bath premises, 1, 2, 3, and 4, Belmont-terrace, for Messrs. Jesty & Baker.

FIRES.

AIRDRIE.—A fire has occurred in the extensive grit-works in Gartlee-road, belonging to Baillie M'Gregor.

BIRMINGHAM.—A serious fire has occurred at Norwich Union Chambers, Chamberlain-square.

BUXTON.—Damage amounting to between £2,000 and £3,000 was caused by a fire which occurred at "Filleigh," Temple-road, the residence of Councillor W. H. Flanagan.

EDINBURGH.—A destructive fire has taken place at the tarpaulin store of the North British Railway Company, at Piershill, resulting in damage estimated at £50,000.

HAWARDEN.—A fire has occurred at the Manor Farm, Hawarden, tenanted by W. W. Bower, and owned by the Squire of Hawarden, which caused over £1,000 damage.

NANTYMOEL.—A serious fire has occurred at the "Court Colman" Hotel.

Trade Openings in the Netherlands.

His Majesty's Consul-General at Rotterdam has forwarded to the Department of Overseas Trade the following extracts from the Dutch press, in which particulars are given of undertakings which may lead to openings for British trade.

WATER GAS WORKS (HARDERWIJK).—D. C. Tiemens, Municipal Architect, of Harderwijk, is drawing up plans for the new water gas works in that place. The building will be commenced within a few months' time.

FISHING HARBOUR (SCHEVENINGEN).—A Bill has been introduced in the Second Chamber for the improvement of the fishing harbour at Scheveningen. Estimate 3,400,000 Gld.; a first instalment of 500,000 Gld. has already been asked for.

IRON DRAWBRIDGE (GRONINGEN).—The Town Council of Groningen have decided to have an iron drawbridge built across the Oosterhamrek-kanaal. The cost is estimated at 35,000 Gld It is the intention to call for tenders for the laying of the foundations, and to write to manufacturers for prices for the construction itself.

TRADE NEWS.

Mr. Edward Swingler, concrete engineer, 17A, North-street, Leighton Buzzard, has sent us details of his invention in connection with post and wire fencing. It appears that the principal feature is the method of securely fixing the wires in every hole of the posts. This is effected by reinforcing the holes with a specially shaped steel tube which is set in the desired position in the post during manufacture. After the posts are erected, the wires are led through and strained taut by an independent straining apparatus; a suitably shaped metal wedge is driven in, locking the wire to the tube and consequently to the post, without exerting any strain on the ferro-concrete posts. If the wires are fully strained when fixing no slackening occurs in use, and the whole fence has similar qualities to a post and rail fence. A further advantage is that the posts can be spaced further apart, as the wires remain rigid, thus saving cost. A similar fence of three wires, as used on housing schemes, can be erected complete at a cost of 2s. per yard run. The system lends itself to the easy repair of any fractured wires by the insertion of a repair length through the holes at each end of the fracture after the wedges have been removed.

Chimneys, Ltd., of 47, Victoria-road, London, S.W. 1, have issued a booklet entitled "Some of our work illustrated," in which some excellent illustrations are given of various chimney stacks designed, erected, and repaired by the firm, and also boiler and economiser settings.

We have received an illustrated catalogue from Messrs. Fredk. Braby & Co., Ltd., of Glasgow, giving particulars of the "Eclipse" roof and side lights. It is interesting to know that the first corrugated roof lights were invented and produced at the "Eclipse" Works many years ago, but since then subsequent patents and improvements have been added. The firm's products are all made from material rolled in their own rolling mills, and, after manufacture, are galvanised in a special galvanising department.

The Rolls House Publishing Co., Ltd., Bream's Buildings, E.C.4, have issued a book entitled "Little Houses and How to Build Them," which gives a statement of modern methods of construction, with particular reference to the use and abuse of concrete blocks. Sir Charles Ruthen, Director-General of Housing, has written a foreword.

Messrs. P. C. Henderson, Ltd., engineers, West Bank Works, Barking, London, E., have sent us a copy of their catalogue giving particulars of their sections of tubular track and sliding-door gear. The firm's new "Around the Corner" door hangers, "Council" hangers, and "Across the Corner" hangers, are features that are now well known in building and engineering circles.

The use of small self-propelled trucks for transport purposes in and around industrial plants has made great headway during the past few years. A novel truck for this kind of work is the Clark "Truclift," a self-contained petrol-driven machine, which is being supplied by the Machinery Department of Messrs. Millars' Timber and Trading Co., Ltd., of Pinner's Hall, Great Winchester-street, E.C.2.

The safety of the man on the roof has always been an acute problem, stepping boards and ladders having a tendency to slip. Parts of the roof may be defective in construction and not sound enough to stand the weight of the workman. These troubles are, it is claimed, entirely overcome by the new roof bracket of Messrs. Baxendale & Co., Miller-street, Manchester, which clips itself to the ridge of the roof and gives the maximum amount of safety.

Guardians' Election.

At the election for the Cardiff Board of Guardians on Saturday last, Mr. C. W. Melhuish, builder and contractor, 1, Clare-gardens, Cardiff, was returned for the eighth time. He has sat on the Board for 21 years.

NEW COMPANIES.

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116 & 117, Chancery-lane, W.C.2, from the documents available at the Companies' Registry.

CINCOED (LLANDEBIE) LIME AND SILICA CO., LTD. (177,921.) 52, Rhosmaen-street, Llandilo, Carmarthen. Registered November 21. Nominal capital, £20,000.

LIGHT BROS. & FLOWERS, LTD. (177,928.) Registered November 21. 8, Crasswell-street, Portsmouth. Builders, decorators, contractors, and brickmakers. Nominal capital, £5,000.

W. COLLINGTON (BUILDERS), LTD. (177,937.) Registered November 21. Court Chambers, 27½, Friar-lane, Leicester. Builders and contractors. Nominal capital, £5,000.

HENRY CROWTHER (WALSALL), LTD. Dewsbury-road, Leeds. Joiners, builders, and contractors. Nominal capital, £1,000.

JOSEPH MEARS, LTD. (177,982.) Registered November 23. Crabtree Wharf, Crabtree-lane, Fulham, S.W. Contractors, builders and wharfingers. Nominal capital, £25,000.

LAVENDER & BATEMAN, LTD. (177,986.) Registered November 23. Sutton Bridge, Lincolnshire. Road-stone merchants and tar-paving contractors. Nominal capital, £10,000.

GRANWOOD FLOORING CO., LTD. (178,001.) Registered November 24. The Victory Works, Riddings Alfreton, Derbyshire. Nominal capital, £15,000.

HOWICK WHINSTONE QUARRIES, LTD. (178,002.) Registered November 24. Littlehoughton, Lesbury, Northumberland. Stonemasons, lime burners, stone dealers, &c. Nominal capital, £6,000.

ATRACINE ENAMEL CO., LTD. (177,940.) Registered November 22. Hindley's-place, Forest Hill, S.E. 23. Manufacturers of oils, paints, pigments, and enamels. Nominal capital £2,000.

HODSON & SON, LTD. (178,047.) Registered November 25, 58, Castle Gate, Nottingham. Stone, granite, marble, slate, and mineral workers. Nominal capital, £5,000.

HILLYER & HILLYER, LTD. (178,334.) Registered December 12. 284-286, West Green-road, Tottenham, Middlesex. Auctioneers, architects, surveyors, and estate agents. Nominal capital, £10,000.

G. B. HUGHES & CO., LTD. (178,333.) Registered December 12. 175, Piccadilly, W. To build, construct, design and execute public or private works and conveniences of all kinds. Nominal capital, £5,000.

SPEDOL MANUFACTURING CO., LTD. (178,322.) Registered December 10. Beehive Wharf, Brentford, Middlesex. Dealers in paints, varnishes, and enamels. Nominal capital, £5,000.

ERNEST HINDMARSH & CO., LTD. (178,362.) Registered December 13. 58, Shaftesbury-avenue, W.C. General engineers, builders, and contractors. Nominal capital, £10,000.

MARK LANE & CO., LTD. (178,372.) Registered December 13. Builders and general contractors. Nominal capital, £10,000.

F. FOXLEY & CO., LTD. (178,389.) Registered December 14. Builders and decorators. Nominal capital, £10,000.

CONSTRUCTORS (TRADING CO.), LTD. (178,384.) Registered December 14. 8, Newhall-street, Birmingham. To construct public or private works, buildings, and conveniences. Nominal capital, £2,500.

DURHAM INVESTMENT CO., LTD. (178,386.) Registered December 14. Westminster House, 7, Millbank, S.W. 1. To acquire and hold shares, stocks, debentures, &c., and to purchase for investment or re-sale land and other property. Nominal capital, £1,000.

R. HINDMARCH, LTD. (178,399.) Registered December 14. 42, Osborne-avenue, South Shields, Durham. Plasterers, cement manufacturers, &c. Nominal capital, £500.

ARCHIE & CO (LONDON), LTD. (178,406.) Registered December 15. 63, Moorgate-street, E.C. Builders, decorators, &c. Nominal capital, £500.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach him not later than Tuesday evening.

*Denotes *accepted.* † Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modifications.*

ASHTEAD, SURREY.—For erection of a bungalow. Mr. Richard Lee, architect and surveyor, Great Bookham :—

H. & H. F. Higgs, Ltd., Herne Hill..	£3,700
E. H. Cummins, Dorking	3,343
Sheesmith & Lee, Ltd., Cobham	3,195
J. De'Ath, Ashtead	3,070
Norris & Limming, Ltd., Leatherhead	3,054
H. H. & F. Roll	2,951
Henry Taylor & Son	2,950
*Cropley Bros., Ltd., Epsom	2,947

AUCHTERLESS.—For (1) addition to dwelling-house; (2) alterations to dwelling-house and additions to offices, Turriff, on the Hatton Estates. Mr. W. L. Duncan, architect, Turriff :—

(1) G. & A. Cruickshank (*Mason*), Pitcaple.
James Whyte (*Carpenter*), Auchterless.
W. J. J. Eddie, (*Slater*) Fyvie.
James B. Dallas (*Plasterer*), Turriff.
Anderson & Lowe (*Plumber*), Turriff.
Total..£483 16 11

(2) Alexander Fordyce (*Mason*), Turriff.
Joseph Rae & Son (*Carpenter*), Turriff.
Chas. Dickie & Son (*Slater*), Turriff.
James B. Dallas (*Plasterer*), Turriff.
Chas. Duthie & Son (*Plumber*), Turriff.
Total..£461 13 0

BEDFORD.—For foundations, drains, floors, &c., for the new Diesel Engine House, for Messrs. W. H. Allen, Sons & Co., Ltd. Mr. George P. Allen, F.R.I.B.A., architect, 79, High-street, Bedford :—

J. Corby & Son, Bedford	£683 0
S. Foster, Bedford	659 0
†Laughton, Bedford	549 10

BOURNEMOUTH.—For supply of granite to the T.C. :—

*Road Maintenance & Stone Supply Co.—Cherbourg quartzite..£1 7s. 9d. per ton delivered to West Station.
*A. & F. Manuelle—Guernsey granite..£1 7s. 6d. per ton.

BRADFORD.—For cold storage installation at St. Luke's Hospital, for the Board of Guardians :—

*J. & E. Hall, Dartford..... £1,160

CAMBRIDGE—For erection of 30 parlour-type houses in Milton-road and Union-lane, for the B.C. Mr. J. E. L. Whitehead, Town Clerk, Guildhall, Cambridge :—

W. G. Tarrant, Ltd., Byfleet	£22,841 0
S. E. Hodge, Bury St. Edmunds	21,580 0
S. S. Ambrose, Ely	20,302 0
W. Canham, Somersham	20,150 0
F. A. Roper, Ipswich	17,438 0
F. Plowman, Cambridge	17,381 0
Pearson & Wright, Huntingdon	17,331 0
W. Saint & Co., Ltd., Cambridge	17,263 0
Jeffs & Co., Letchworth	17,205 0
A. E. Brown, Grantham	17,202 0
W. E. Davy & Co., Southend-on-Sea	17,004 0
J. Ray, Letchworth	17,000 0
F. B. Thackeray, Ltd., Huntingdon	16,980 0
W. Pattinson & Sons, Ruskington	16,500 0
D. C. Pearce, Letchworth	16,480 16
G. B. Mortlock, Cambridge	16,190 0
Manders & Baily, Letchworth	16,138 0
J. W. Palmer, Aylsham	16,097 0
Richards & Co., Ltd., Biggleswade	16,020 0
Coulson & Sons, Ltd., Cambridge	15,600 0
W. Jones & Sons, Westminster	15,400 5
Lacy & Son, Luton	15,250 0
H. C. Tofts, Attleborough	15,178 0
E. J. Wilson, Stanford	15,050 0
E. Clarke, Stratford-on-Avon	15,000 0
W. Thompson & Sons, Irthlingborough	14,990 0
R. Ireson, Stanford	14,910 0
J. Brignell, Cambridge	14,910 0
F. R. Hipperson, Norwich	14,748 0
National Building Guild, Cambridge	14,636 0
A. Cole, Ltd., Luton	14,560 0
Eggit & Sons, March	14,550 0
J. R. Bennett & Sons, Cambridge	14,229 0
W. C. Morgan, Olney	14,000 0
Northfield & Sons, Cambridge	13,965 0
G. E. King, Northampton	13,950 0
A. J. & H. W. Chown, Northampton	13,680 0
W. Higgins, Ltd., Northampton	13,650 0
P. P. Drever & Sons, Kettering	13,500 0
Dare & Waring, Birmingham	13,104 0
Kerby & Clarke, Cambridge (12 houses)	5,964 0

The whole of the tenders have been submitted to the Ministry of Health.

CHATHAM.—For painting, &c., the exteriors of the Ordnance-street, Glencoe-road, and New-road Council schools, for the Education Committee. The Education Clerk, Town Hall, Chatham :—

*Tweman, Chatham—£36 10 (New-road).
*W. Payne, Chatham—£135 (Glencoe-road).
*Cooper, Chatham—£121 10 (Ordnance-street).

DENHAM PLACE.—For erection of set of farm buildings, &c., on Denham Place estate, for the Middlesex C.C. :—

A. Monk	£903 0
W. S. Try	816 19
*Lovell & Sons	806 0

DONCASTER.—For erection of 20 houses on the Carr House-road site, for the T.C. Mr. R. E. Ford, surveyor, 3, Priory-place, Doncaster. Quantities by surveyor :—

*C. Sprakes & Sons, Doncaster..... £9,515

HARROGATE.—For erection of war memorial. Messrs. J. C. Prestwich & Sons, architects, Leigh, Lancashire :—

A. Hanchett, Bury St. Edmunds	£8,155 10
Emley & Sons, Newcastle-upon-Tyne	7,440 0
White & Sons, Birmingham	7,155 0
R. L. Boulton & Sons, Ltd., Cheltenham	7,085 0
R. Beall, Newcastle-upon-Tyne	6,899 9
R. Dawson & Co., Bradford	6,765 6
R. Lehane & Co., Ltd., Darley Dale	6,614 0
W. Thompson & Sons, Leeds	6,514 0
Wright & Son, Ltd., Lincoln	6,395 0
Benfield & Loxley, Ltd., Oxford	6,325 0
Farnish & Sons, Bradford	6,200 0
D. Gill & Son, Doncaster	6,077 0
E. Fearnley & Sons, Bradford	6,000 0
J. Fidler, Ltd., Sheffield	6,000 0
A. Hyams, Harrogate	5,727 0
A. Graham & Sons, Huddersfield	5,700 0
Hodsons, Ltd., Nottingham	5,700 0
Moss & Sons, Ltd., Liverpool	5,472 0
R. Whitehead, Sheffield	5,459 0
Clegg & Sons, Chester	5,460 0
R. Carlyle & Co., Ltd., Manchester	5,460 0
Dickinson & Co., Ltd., Bolton	5,346 0
Kirkpatrick, Ltd., Manchester	5,300 0
G. Graham's Quarry Co., Huddersfield	5,215 0
F. & H. Nuttall, Ltd., Manchester	5,050 0
G. & E. Moores, Manchester	5,000 15
‡Wm. Irwin & Co., Ltd., Leeds	4,876 0

HENDON. — For the completion of certain artisans' dwellings at Brent-hill Farm Estate, for the U.D.C. Mr. George Hornblower, architect, 2, Devonshire-terrace, Portland-place, W.1 :—

	Estimate No. 1.	Estimate No. 2.
W. Silk & Sons, Homerton	£70,057 0 0	£22,777 0 0
J. Gutteridge & Sons, Peterborough	57,421 17 0	18,951 0 0
Miskin & Sons, St. Albans	53,081 0 0	19,673 0 0
Thos. Shillitoe, Holloway	51,824 0 0	18,100 0 0
S. E. Moss, Southend-on-Sea	48,284 0 0	21,000 0 0
F. Garner & Son, Leicester	52,501 0 0	16,310 0 0
J. W. Ellingham, Dartford	50,792 0 0	17,380 0 0
Seymour Construction Co., Ltd., Barking	51,671 19 11	14,785 12 1
Chas. Jeyes, Luton	49,355 13 9	16,371 0 0
W. Potts & Sons, Finchley	50,705 0 0	14,790 0 0
Geo. Slade & Co., Barnsbury Park	44,728 11 3	18,361 5 9
C. L. Newby & Bros., Southgate	44,108 15 0	18,692 0 0
C. F. Day, Ltd., Finchley	47,026 0 0	15,000 0 0
Guild of Builders, Ltd., London	43,583 5 0	17,724 0 0
F. & H. Higgs, Ltd., Herne Hill	42,029 0 0	18,138 0 0
J. Costin & Co., Harrow	42,307 0 0	15,398 0 0
Harry Neal, Northwood	41,076 19 2	13,900 0 0
W. C. Morgan, Olney	37,360 16 0	14,800 0 0
*J. E. Billings & Co., Oxford	34,914 4 4	14,898 1 9

* Accepted to complete 158 houses.

HUDDERSFIELD.—For pulling down and rebuilding mill premises and conversion of the same into offices, for the T.C. Mr. H. Sutcliffe, Borough Architect and Surveyor, Huddersfield. Quantities by architect :—

Graham & Jessop, Ltd., (Alterations), Huddersfield.
T. H. Rayner & Sons (Heating), Huddersfield.
John Cooke (Reinforced Concrete Work), Huddersfield.

HUDDERSFIELD.—For construction of bowling-green, for the Moldgreen Conservative Club. Messrs. J. Berry & Sons, architects, Market-place, Huddersfield.
*Fletcher Bros., Huddersfield.

ILKESTON.—Providing and fitting two partitions at Granby Schools, for the T.C. :—

*W. Donnelly & Son £130

JERSEY.—For additions and alterations to Lloyds Bank. Messrs. Sladdin & Brown, architects, 9, Library-place, Jersey, C.I. :—

G. Shellabear & Son, Ltd., Plymouth	£23,323 9 3
C. Le Quesne, Jersey	17,600 0 0
W. Husband, Jersey	17,522 2 8
A. E. Jukes & Son, Ltd., Southampton	16,074 0 0
*Wort & Way, Salisbury	14,750 0 0

LONDON.—For supply of water softening and treatment plant and filters, for the St. Marylebone B.C. :—

G. & J. Weir, Ltd.	£8,091 0
Kennicott Water Softener Co., Ltd.	698 10
United Water Softeners, Ltd.	1,247 10
*The Becco Engineering & Chemical Co., Ltd.—	£1,150 plus £800 for filters.

LONDON.—The City of London Corporation has renewed the following contracts for maintaining asphalte carriageway and footway pavements at revised prices :—

	Present price per yard super. including 100% addition.	Proposed price per yard super (net).
*Val de Travers Asphalte Paving Co., Ltd.—		
Carriageways.	s. d.	s. d.
Alderman's walk	0 8	0 6
Barge-yard	1 0	0 8
Bread-street (Cheapside to Watling-street)	2 0	1 0
Broad-street-avenue	0 8	0 6
Bucklersbury	1 0	0 9
Carter-lane, W. (Creed-lane to Godliman-street)	2 0	1 0
Do. E. (Godliman-street to Old Change)	2 0	1 0
Castle-street	1 0	0 9
Crown-court (Old Broad-street)	1 0	0 9
Garlick-hill	1 0	0 9
Leather-lane	1 6	1 0
London Wall (Moorgate to Wood-street)	2 4	1 4
Nicholas-lane (King William-street to Cannon-street)	1 8	1 0
Old Change (Cannon-street to Knightrider-street)	1 6	1 0
Old Change (Watling-street to Cheapside)	1 6	1 0
Watling-street	2 0	1 3
Footways.		
Cheapside (North side from Old Jewry to Ironmonger-lane)	1 8	1 0
Crown-court (Cheapside)	1 0	0 6
Little Britain	1 2	0 7
Lloyd's-avenue	1 0	0 6
Mansion House-street	1 8	1 0
Poultry	1 8	1 0
Salters' Hall-court	1 0	0 6
Sise-lane	1 0	0 9
*London Asphalte Co., Ltd.—		
Carriageways.		
Bridgewater-square	0 4	0 6
Fann-street (middle portion)	0 8	0 8
Vine-street (formerly America-square)	0 5	0 7
Footways.		
Aldgate High-street (N. side)	1 0	0 9
Clark's-place	0 6	0 4
Eastcheap	1 0	0 9
Evangelist-court	0 6	0 3
Rangoon-street	0 2	0 2
Wrestler's-court	0 6	0 4
*French Asphalte Co., Ltd.—		
Carriageways.		
Milton-street	3 0	2 6
Moorfields	2 0	1 3
Oat-lane	0 4	0 6
Paternoster-square	0 6	0 6
Queen Victoria-street (Mansion House-street to Cannon-street)	4 0	3 6
Whitecross-street	0 10	1 0
White Hart-street	0 4	0 6
Footways.		
Beech-street (South side)	0 6	0 5
Bengal-court	0 6	0 4
Billiter-street	0 6	0 5
Cobb's-court	0 4	0 3
Crown-court (Fleet-street)	0 6	0 4
Fleur-de-Lis-court (Fetter-lane)	0 6	0 6
Gresham-street (North side)	1 0	0 9
Holborn (South side)	0 10	0 9
Old Bailey	1 0	0 9
Plough-court (Fetter-lane)	0 6	0 5
Plough-court (Lombard-street)	0 8	0 6
St. Benet's-place	0 8	0 6
St. James'-court	0 4	0 3
Silver-street	0 4	0 4
Stationers' Hall-court	0 4	0 4
Stokes-court (Holborn)	0 6	0 4
Throgmorton-street	0 6	0 6
Trinity Church-passage	0 8	0 6
Watling-street	0 8	0 8
*Limmer & Trinidad Lake Asphalt Co., Ltd.—		
Carriageways.		
Broadway	1 0	0 10
Duke-street, Aldgate	1 2	0 11
Duke-street (Houndsditch to St. James's-place)	1 0	0 11
Holborn Viaduct	4 6	3 11
New-street, Bishopsgate	1 0	0 10
Primrose-street	0 6	0 6
Silver-street	1 0	0 10
Footways.		
Chancery-lane (West side)	0 8	0 6
Church-alley	0 6	0 4½
Ivy-lane	0 8	0 6
Lawrence-lane	0 8	0 6
Lovell's-court	0 6	0 4½

LONDON.—For carriageway repairs in various streets for the Westminster C.C. (1) Bolton-street (2) Allington-street; (3) Parliament-street) :—

G. J. Anderson—
(1)£470 5 0.. (2)£627 0 0.. (3)Incomplete,
Improved Wood Pavement Co., Ltd.—
(1) 492 0 0.. (2) 656 0 0.. (3)£878 4 6
*Alex. Thomson & Co.—
(1) 447 10 0.. (2) 583 6 8.. (3) 869 18 10
John Mowlem & Co., Ltd.—
(1) 490 15 0.. (2) 644 6 8.. (3) ——
W. Griffiths & Co., Ltd.—
(1) 459 15 0.. (2) 608 0 0.. (3) 926 10 6

LONDON.—Supply of 18 street orderly handcarts; to the Deptford B.C. :—

*John Yates & Co., Birmingham.. £9 13 2 each

LONDON. — For repairs and painting at East Finchley Cemetery, for the St. Marylebone B.C. :—

A. Imber & Sons, Highgate	£393
C. Hall & Sons, Finchley	376
E. E. & A. Tee, East Finchley	367
Mr. J. Belton, East Finchley	324
*F. Bull &' Son, Praed-street, W.2	315

LONDON.—For 125,000 8 in. by 3 in. pine blocks of various depths, for the Westminster C.C. :—

*Calder & McDougall..At prices ranging from £14 8s. 7d. to £12 1s. 3d. per 1,000.

LONDON.—For circulating water mains, &c., at Electricity Station, for the St. Marylebone B.C. :—

*Alton & Co., steel circulating water mains	£3,940 0
*J. Blakeborough & Son, valves	1,927 15
*Davies & Stack, 9-in. cast-iron pipes	515 0

LONDON.—For alterations, &c., at the Art Gallery, for the City Corporation :—

	For alteration of premises.	For additional work on the Ground Floor.
Munday & Son	£2,973	£1,064
Cubbitts	2,703	1,084
Sheffield Bros.	2,525	923
Trollope & Colls	2,436	898
Killby & Gayford	2,343	835
Lidstone & Son	2,240	885
Holloway Bros.	2,193	885
Carmichael, J.	2,177	922
Whitehead, L. & W.	2,011	796
*Lawrence & Son	1,728	794

LONDON.—For laying Trinidad asphalte macadam in Great Smith-street, for the Westminster C.C. :—

*Limmer & Trinidad Lake Asphalte Co. £2,242 10

LONDON.—For furniture and fittings at public library, Bethnall House, for the Bethnal Green B.C. :—

Harris & Sheldon, Ltd., 70, Wood-st., Cheapside, E.C.2	£7,120 2 0
Patman & Fotheringham, Ltd., Park-street, Islington, N.1	6,821 0 0
Hampton & Sons, Ltd., 8, Pall Mall East, S.W.1	6,799 9 6
John P. White & Sons, Ltd., The Pyghtle Works, Bedford	6,796 0 0
The Shannon, Ltd., 15-16, Ropemaker-street, E.C.2	6,632 3 4
North of England School Furnishing Co., Ltd., Darlington	6,584 8 11
J. Carter & Co., 12, Lime-street, E.C.3	5,574 5 10
G. Withers & Co., Malt-street, Old Kent-road, S.E.1	5,377 1 1
Libraco, Ltd., 62, Cannon-street, E.C.4	5,287 7 0
*G. M. Hammer & Co., Ltd., Crown Works, St. James'-road, Bermondsey, S.E.16	5,149 0 0
C. Jefferson, Pinions, High Wycombe	4,094 15 7

LOUGHBOROUGH.—For laying reinforced concrete and pipe sewers, for the T.C. Mr. A. H. Walker, Borough Surveyor, Loughborough :—

	Contract No 1	Contract No. 2.
A. Sykes, Nottingham	£6,633 10 9	£3,029 16 6
Unit Construction Co., Birmingham	5,703 11 7	2,705 14 1
T. Barker & Sons, Loughborough	4,316 0 0	1,821 0 0
Hussey & Egan, Birmingham	3,709 10 7	1,438 8 3
W. Muirhead, Macdonald, Wilson & Co., Birmingham	3,176 2 11	1,114 16 6
T. Hickman & Sons, Market Harborough	2,948 0 0	1,221 0 0
W. Lane, Birmingham	2,928 1 6	1,177 18 0
W. Moss & Sons, Loughborough	2,775 0 0	1,099 0 0
‡A. L. & H. W. Chown, Northampton	2,712 13 1	1,043 14 9

PLYMOUTH.—Alterations at Devonport Library for the T.C. :—

*J. Scoble £382 2 6

PONTNEWYDD.—For erection of a block of buildings, comprising council chamber, offices, fire-station, workshops, stables, cartshed, construction of short length of new road, erection of fences, &c., at Tyr Box Farm, for the Llanfrechfa Upper U.D.C. Mr. M. R. Jones, architect and surveyor, Ashley House, Pontnewydd :—

Unit Construction Co., Newport	£3,400 0 0
Edwin Poulton, Pontnewydd	2,560 0 0
Beese Bros., Pontnewydd	2,529 5 6
J. M. Broadfoot, Newport	2,397 0 0
Whiting Bros., Pontnewydd	2,348 0 0
W. Alban Richards & Co., Cardiff	2,300 0 0
*Hybart & Broadhead, Griffithstown	2,058 6 0

WOLVERHAMPTON.—Erection of hutment at Brickkiln-street Girls' School, for the T.C. :—

Harrison Smith Buildings, Ltd... £247 10

WORTHING.—For providing and laying wood-paving in Warwick-street, for the T.C. Mr. F. Roberts, Borough Surveyor, Worthing :—

J. Cronk & Son, Brixton-hill	£4,488 0 0
W. Griffiths & Co., Ltd., Bishopsgate	4,203 13 4
Acme Flooring & Paving Co., Ltd., Victoria Park	4,188 12 4
J. Mowlem & Co., Ltd., London	4,178 13 4
*Improved Wood Pavement Co., Ltd., London	3,960 15 2

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